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Denationalising Road Haulage

THE formation of companies under the company structure proposals of the Government for the disposal of the nationalised road haulage undertaking was the chief feature of the House of Lords debate on the Committee Stage of the Transport Bill when resumed earlier this week. Details of the Government proposals in the new clause moved by Lord Selkirk are given in our Parliamentary columns. The companies may be "unlimited in size." Although the Government apparently expects this method of disposal to be rare as compared with direct sale by transport units, and although the scheme is to be permissive, with the object of creating an organisation to keep road services going and enable them to be transferred without cessation of working, Lord Selkirk's emphasis that this is not a change of policy seems to point to some misgivings as to ready sale by units. Whatever form denationalisation takes, transport must be carried on without interruption; for that reason alone the new clause is welcome. The Government seems to be standing firm on the transport levy with its object of making good losses on a sale of road haulage assets. There may be an element of truth in Lord Lucas' point that if units are properly marketed there should be no loss that could not be amortised by the Commission. Against this Lord Swinton reiterated the Government's reluctance to saddle the taxpayer with any loss. There is good reason, however, behind the strong opposition to the levy and one may still hope for its removal before the Bill becomes law. The Government also is standing by its refusal to allow the Commission to retain more than six-fifths of the road vehicles inherited at nationalisation; this proportion is a concession which purports to take into account the development of road haulage in the past five years. The main point is that railway collection and delivery services will continue undisturbed and that certain other important ancillary road services of the Commission will continue to function. On the whole the debate at the time we closed for press had not been very illuminating. One of the most useful functions of the Upper Chamber is its power of useful discussion and amendment of Bills; this may perhaps show itself to better advantage in the discussion on the reorganisation of railways, although in the earlier stages the references to the railways in the Lords were not of the standard that might have been expected.

Charges Scheme before Tribunal

THE first two days of the hearing by the Transport Tribunal of the British Transport Commission's application for the Passenger Charges Scheme, 1953, reported on another page, were occupied mainly by statements of the Commission's case. Mr. Harold Willis, Q.C., appearing for the Commission, anticipated some of the most widely-heard criticisms of the application by refuting the charge that Londoners had been singled out for adverse treatment, and recalled the application last autumn for a 5 per cent increase in freight charges. He promised that evidence of substantial economies in the operation of London Transport would be produced. Mr. Willis urged that the increases Londoners were being asked to pay would not cause hardship, and he quoted the sums spent annually on cigarettes, beer, television, and football pools as evidence of what family budgets will bear. He also claimed that there was no hostile criticism of the wage claims by transport workers that made applications for increased fares necessary. His first witness was Sir Reginald Wilson, Comptroller of the B.T.C., who maintained that a proper amount of progress was being made by London Transport towards efficiency and economy. This controversial point is now being discussed in Parliament as well as at the Tribunal, for it is the basis of an objection due to be raised as we close for press by a group of M.P.s against the British Transport Commission Bill.

Transport Revenue and Fares

AT the opening of the new Willesden carriage shed on March 9 Lord Hurcomb, Chairman of the British Transport Commission, forecast that for the year just concluded the equilibrium attained in the Commission's accounts for 1951 would just be maintained. He added however that new burdens aggregating £32 million a year were added towards the end of the period and these could not be covered without increased fares and charges. He gave the assurance that the Commission's commercial staff sought every opportunity to increase revenue by excursion or other facilities, but emphasised that if fares were reduced without gaining sufficient additional traffic to improve the Commission's financial position, the effect would be detrimental to the trading community of the country. The circumstances in which Lord Hurcomb was speaking, namely the opening of a depot equipped with every modern device for cleaning main-line rolling stock, gave rise to the hope that if fares continue to increase, the extraction of the additional money from travellers' pockets will be made as painless as possible by the knowledge of improved conditions in which they will make their journeys. Unfortunately the person Lord Hurcomb referred to as "the hardbitten season ticket holder or other daily traveller" is the one who cannot avoid going by rail and seems unlikely to see evidence of similar facilities for cleaning coaches for some time.

The New Willesden Carriage Shed

THE new carriage shed at Willesden referred to in the previous note is described and illustrated on other pages this week. Originally the former L.M.S.R. had planned a depot with 12 roads, but developments in applying the progressive system of working before the war led

to the scheme being modified by that company to comprise a 4-road shed in which vehicles would advance through a sequence of four stages of operations, instead of the staff concerned with various duties having to walk up and down the trains when carrying out their tasks. The scheme was deferred by the war and when the time came to complete it, additional expenditure was necessary, so that the plans have at last been realised under the auspices of British Railways. An essential feature of the scheme is the method of hauling coaches through the shed. The use of winches driven by an electric motor through fluid couplings to provide smooth starting and retardation of the loads is thought to be the first application of the principle for such a purpose. An ingenious system of interlocks and light signals has been installed to ensure that vehicles are not moved while staff are working in or under them. Some 80 per cent of the long-distance trains in and out of Euston now pass through the new shed, at one end of which there is a laundry for dealing with linen from sleeping cars.

G.N.R.(I.) Legislation

THE Government of the Republic of Ireland hopes to introduce legislation for acquiring the G.N.R.(I.) before the end of this month and to have it enacted after Easter. The Minister for Industry & Commerce, addressing the Dail last week, said that the Bill would be introduced simultaneously in Dublin and Belfast. He asked the House to vote an extra £75,000 to meet G.N.R.(I.) operating losses. The sum of £200,000 originally budgeted for in this connection had proved insufficient; it was estimated that another £145,000 would be needed before the end of the month, but against this there were savings of £70,000 as certain works had not been carried out, hence the net sum of £75,000 now asked for. The estimate of losses prepared by the company in 1951 took into account all wage increases granted or foreseen, but there had been later wage increases, which increased fares and rates did not offset. The Government of the Republic will take full credit for any profit and full responsibility for any loss on the road services, all of which operate within the Republic, and any revenue resulting from the increase in fares in the Republic will be credited to its account.

Canadian Pacific Capital Issue

AT the annual general meeting of the Canadian Pacific Railway to be held on May 6 shareholders will be asked to authorise the issue of $50,000,000 of ordinary capital stock. The new shares are required to meet the rights of conversion into ordinary shares of the convertible 15-year and 20-year bonds, and issues to finance the company's five-year programme of modernisation, on which $119,000,000 had been spent by the end of 1951. The present authorised ordinary capital of the company is $500,000,000, of which $450,000,000 has been created and $335,000,000, issued. The preliminary figures of financial results for 1952 show railway net earnings of $28,930,780, compared with $26,812,832 in 1951. Increased freight rates are largely responsible for this rise, which would have been greater but for factors such as the wage increase dating from last April. Gross earnings, a record, were $457,808,969, and working expenses, also the highest yet, were $428,878,189. Other income dropped to $22,651,775 from $29,343,635, partly because of a fall in steamship freight carryings. After deductions for fixed charges and for preference and ordinary dividend, the balance of income is $15,311,699 compared with $19,879,460.

Institution of Locomotive Engineers' Luncheon

A RECORD gathering of 671 at the Institution of Locomotive Engineers' annual luncheon on March 6 heard the Minister of Transport, Mr. Alan Lennox-Boyd, express his own and the nation's gratitude to their branch of the engineering profession for the way in which it had advanced British prestige throughout the world. The Minister looked forward to harmonious co-operation with the industry in tackling problems that lay beyond the present political ones of the Transport Bill, such as reconciling the good features of standardisation with the exercise of individual initiative. As to the progress of the Bill itself, Mr. Lennox-Boyd said there was plenty of evidence that under the present Government the House of Lords was no mere rubber stamp. Mr. C. M. Cock, President of the Institution, expressed the hope that when the Minister's political preoccupations were less engrossing, he would give thought to improving railway services by methods such as electrification. His recipe probably was palatable only to a relatively limited number of the guests. The reply to the toast of "The Guests" was given by Sir John Calder, the Senior Crown Agent, who described the growth and activities of an institution which was "a lasting mystery to every logically-minded foreigner." At the end of the function, which is reported on another page, Mr. Cock read a telegram of congratulation to the Indian railways on their centenary the following day.

Adapting Railways to New Circumstances

FUNDAMENTAL changes in railway methods if this form of transport is to fulfil the functions for which it alone is suitable, were urged by Mr. C. T. Brunner, President of the Institute of Transport, in a speech at Bristol on March 4. He called attention to the main-line diesel-electric locomotive now making two return trips daily between Waterloo and Exeter on the Southern Region, and hoped the railways were not being too conservative in their approach to the problem of using diesel power more widely. Such a development, and further electrification in densely-populated areas, were two possibilities he thought well worth exploring in the search for basic changes commensurate with the altered transport economy of today. At the same time, Mr. Brunner approved the steps the railways had been able to take so far in order to relieve their position despite restrictions on capital expenditure, although he would like to see further facilities such as the "Starlight Expresses," offering lower fares on main-line journeys which were remunerative, and a quicker elimination of branch lines which were not. His argument that electric suburban services contribute to productivity because their frequency saves passengers' time is complimentary to the spirit with which business travellers approach the choice of devoting their extra minutes to work or pleasure. Other subjects touched on by Mr. Brunner included the size of goods wagons, which he thought far too small, and the approaching conflict between raising fares and charges and the fact that doing so drives traffic away.

Preventive *versus* Corrective Track Maintenance

SOME interesting points were made by a speaker at a recent conference in the United States of the Roadmasters & Maintenance of Way Association, when discussing past and present methods of permanent way maintenance. In the days of the old section gangs most of their work was corrective; it consisted largely of attending to "bad spots" in the line, packing up rail-joints, removing defective rails, and so on. Today, on many lines, the section gangs have been replaced by mobile district gangs, whose work is preventive rather than corrective. Patrolling detector cars and ultrasonic methods of detection are used to locate rail flaws before breakage occurs, so that, apart from the greater safety of trains, any replacements necessary can be made by a single gang following up the detectors rather than individually by section gangs. On the St. Louis-San Francisco Railroad, which the speaker represented, a typical district gang consists of foreman, assistant foreman, lorry-driver, and 10 to 15 labourers, equipped with an inspection-type motor for track inspection, a road lorry, and a complement of power tools. Normally the assistant foreman and from one to three labourers do the track inspection, and the foreman and the remainder of the gang concentrate on track surfacing and other necessary work. Each gang is responsible for an average of 33 miles of line, and can rehabilitate its entire district in from four to six years.

Success of New Signalling at York

A TRENCHANT review by Mr. H. M. Lattimer, District Operating Superintendent, York, of one full year's operation of the new centralised all-electric signalling installation at York points to considerable reduction in traffic delays, increased throughput of traffic, and economies effected. He was addressing the North Eastern Region York Lecture & Debating Society, and his paper covered the twelve months from the taking over of the installation on May 21, 1951. Between 1950 and 1952 the freight train speed in York District rose by 16 and freight train-hours dropped by 20 per cent. An official report says that York no longer is a freight train bottleneck. The total cost of freight train operation in the district is some £400,000 a year; with even 5 per cent of this saved by increased efficiency at York, Mr. Lattimer suggests, and an economy of as much again in the direct saving of £22,000 a year in the wages of signalmen no longer needed, and another 10 per cent saved by introduction of better freight train control, the freight operating economies alone are great. Electric power failures have been rare; but one unexpected difficulty, quickly remedied, arose from demolition of the Loco. Box, which proved to be the chief source of light for a busy shunting area. As to passenger working, the accountant's figure of £2,000 annually which could result from 100 per cent punctuality of all local trains does not represent anything like the less tangible benefits which have resulted.

Indian Railway Equipment Pioneers

THE Indian Railways Centenary Exhibition at New Delhi brings into prominence the long-standing and varied contribution to railway development in the country made by British manufacturers. In locomotives, rolling stock, signalling, and many other directions, builders in this country have been associated with Indian railways from their beginning. An account of exhibits in the pavilions devoted to products of non-Indian manufacturers is given on other pages this week. It will be noted that the first locomotives for the Bombay-Thana line, of which the centenary is the occasion for the exhibition, were shipped from England, and that a Birmingham company's files contain designs of coaches supplied for that line at the same time. It was at this early date, then, that the Vulcan Foundry Limited and the Metropolitan-Cammell Carriage & Wagon Co. Ltd. began their association with India, and the accumulation of experience regarding the particular requirements of the country which have long been and still remain so valuable.

A landmark in the locomotive history of India was the building in 1903 by Robert Stephenson & Company (now a Vulcan associate) of the Bengal-Nagpur 2-8-0 freight locomotives, which subsequently became the first Indian standard engine. When standardisation began in India in earnest in the 1920s, Vulcan received the first order for 73 broad-gauge and 52 metre-gauge locomotives. Today the company is contributing by the supply of components and technical assistance to the new locomotive works at Chittaranjan, and a steady flow of Indian trainees is passing through the Vulcan shops, who in due course no doubt will carry on the traditions of past generations of famous locomotive engineers. The North British Locomotive Co. Ltd., was another early contributor to Indian railway motive power, and displays on its stand at the exhibition show how between 6,000 and 7,000 locomotives have been delivered to the country since 1858, when Neilson built 2-4-0 tender engines for the B.B. & C.I.R., and Sharp Stewart a 2-2-2 design with tender for the Scinde Railway. Since that year North British locomotives have been supplied to India in a quantity that is equivalent to the rate of six a month for 95 years.

Rolling stock design for India by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., spans the range from the four-wheeler to the modern lightweight steel vehicle in which the body carries all the main loads. The story is told in a Metro-Cammell booklet, " Linked for 100 Years," in the foreword of which good wishes are expressed for the centenary. In 1868, six years after the original firm of Joseph Wright & Sons had been taken over by the Metropolitan Railway Carriage & Wagon Co. Ltd., the first sleeping cars were supplied to India, for service on the Great Indian Peninsula Railway. The early years of the present century saw large numbers of goods vehicles being supplied to India, and between 1907 and 1909 the Metropolitan Amalgamated Carriage & Wagon Company, which had taken over the business of the earlier Metropolitan Company, supplied various railways in India with nearly 11,000 wagons and more than 200 coaches.

Another close link between India and Great Britain is in signalling. The greater part of the equipment is of Westinghouse manufacture, or of its associate, Saxby & Farmer (India) Limited. As far back as 1870, the latter was supplying mechanical signalling equipment and today still concentrates on such apparatus as the major part of the railway system is still mechanically signalled. Much resignalling of the double-wire working type is now being carried out in various parts of India by Saxby & Farmer (India) Limited. About 20 years ago, Westinghouse carried out the first installation of colour-light automatic signals and electro-pneumatic interlocking in India. This was at the Bombay terminal of the old G.I.P.R.

Westinghouse brake equipment is also used extensively on the Indian railways and at the moment the company is supplying 500 sets of vacuum brake equipment for 4-wheel covered wagons to the Metropolitan-Cammell Carriage & Wagon Co. Ltd., and also 100 sets of automatic vacuum brake for third class coaches to the Gloucester Railway Carriage & Wagon Co. Ltd., all of which are destined for the Indian railways. In addition, the new multiple-unit electric rolling stock for the suburban routes of the Central and Western Railways is equipped with electro-pneumatic brakes of Westinghouse manufacture. A considerable amount of brake equipment is also manufactured in India by Saxby & Farmer (India) Limited and supplied to the railways.

Indian Railway Budget, 1953-54

THE budget speech of Shri Lal Bahadur Shastri, Indian Minister for Railways, opened with a reference to the death of his predecessor, Shri Gopalaswami Ayyangar, as a national loss and a eulogy of his four years' work for the railways. The Minister then revealed that the actual surplus in the year ended March 31, 1952, had been Rs. 28·34 crores, an improvement on the February, 1952, estimates of no less than Rs. 6·28 crores, the result mainly of abnormal passenger movements (Rs. 1 crore = £750,000). This abnormality is confirmed by the placing of the revised passenger earnings in 1952-53 at only Rs. 102·05 crores as against the budget estimate of Rs. 112·19 crores. The figures for 1952-53 and the budget estimates for 1953-54 are summarised in the table below; in it, all figures are in crores of rupees:—

—	1952-53			1953-54
	Budget estimate	Revised estimate	Increase or decrease	Budget estimate
Receipts—	Rs. crores	Rs. crores	Rs. crores	Rs. crores
Passenger & coaching ...	131·59	120·59	−11·00	120·28
Goods	145·66	144·56	− 1·10	147·60
Miscellaneous (net) ...	4·91	4·40	− 0·51	4·40
Total	282·16	269·55	−12·61	272·28
Working expenses ...	187·69	188·85	+ 1·16	190·99
Depreciation Fund ...	30·00	30·00	± 0	30·00
Payments to worked lines	0·24	0·25	+ 0·01	0·21
Total expenses ...	217·93	219·10	+ 1·17	221·20
Net traffic receipts ...	64·23	50·45	−13·78	51·08
Net miscellaneous expenditure	6·76	6·86	+ 0·10	7·00
Net revenues	57·47	43·59	−13·88	44·08
Dividend to general revenues	34·00	34·11	+ 0·11	34·77
Net surplus	23·47	9·48	−13·99	9·31

The Minister explained that passenger traffic now appeared to be adjusting itself to a normal level, but it was difficult to estimate what that level would ultimately be. In the new budget, Rs. 42 crores had been allowed for rolling stock and machinery, and Rs. 36·61 crores for works, including Rs. 6·70 crores for new construction and the restoration of dismantled lines. Rs. 1 crore was provided for investment in road services, and Rs. 1·89 crores for the purchase of the Barsi Light Railway.

The site for the great Ganges road-rail bridge near Mokameh had now been finally selected, and work had already restarted. Construction work had also begun on the Quilon-Ernakulam line to connect the port of Cochin with the southern Indian metre-gauge system. The most important new railway on which it was proposed to begin construction in the coming fiscal year was the Khandwa-Hingoli 186-mile connection, to link up the two separate metre-gauge systems in the country—that one in northern and that in southern India.

Of the 239 locomotives acquired or expected to be acquired during the current year, 36 would be Chittaranjan products. Up to the end of December these works had turned out 49 broad-gauge engines, and the Tata Locomotive & Engineering Company had supplied 35 metre-gauge engines. Chittaranjan was now making about 70 per cent of the components required for a complete locomotive. Provision was made in the budget for the purchase of 11,000 wagons, 7,000 of which would be built in India.

To combat overcrowding, 109 new trains had been introduced between April 1 and December 31, 1952, and the runs of 108 had been extended during that period; 9,850 additional train-miles daily were involved. First class accommodation was expected to be withdrawn entirely by October, 1953, and would be withdrawn from all but some mail and express trains by April of this year.

Burma Railways

THE report of the Burma Railway Board for the year 1950-51, which has been sent us by the Chairman, Mr. E. Barnard, states that the gradual improvement in the internal situation of the country, with liberation of many districts from insurgent control, enabled good progress to be made in restoring railway communications and in general rehabilitation of the system. Restoration of order resulted in improved train services and working of traffic on nearly all sections. The total mileage under operation at the end of the year was 1,514 against 1,400 the preceding year.

The most important event was the successful completion of rebuilding the Gokteik Viaduct, reopened in August, 1951, re-establishing direct rail communication between the Northern Shan States and Lower Burma. On the main line between Shwemyo, 247 miles from Rangoon, and Tatkon, 132 miles from Mandalay, work started on clearing the insurgents from this area and the linking of two railheads was begun. Despite many difficulties through running to Mandalay eventually was restored. There were 542 instances of sabotage compared with 282 in the previous year. The track was sabotaged on 198 occasions, trains were fired at on 32; 59 buildings were destroyed through arson; 204 bridges were dynamited; and trains were mined on 49 occasions.

Casualties to passengers were 29 killed and 55 injured, and nine railwaymen were killed and 50 injured as the result of insurgent action. The special measures for protecting trains by day were continued. By the end of the year, there were 13 armed patrol trains made available for the army, Union military police, and civil police for security purposes. In addition armoured wagons were attached to trains for armed escorts.

The accompanying table gives provisional figures for the year under review. When the report went to press, the annual accounts for 1948-49 were under compilation, and it was hoped shortly to close these and the accounts for 1949-50. The monthly accounts had been compiled up to August, 1951. The gross traffic receipts of Rs. 33·7 million fell short of the revised budget estimate of Rs. 39·5 million.

	1949-50	1950-51
	(Millions)	
Passenger journeys	6·6	9·8
Passenger miles	106·7	206·3
Goods tonnage carried	0·8	1·4
	(Rs. millions)	
Passenger revenue	8·0	13·6
Goods traffic revenue	11·0	19·5
Total receipts	20·2	33·7

The increase in the number of passengers and passenger earnings was caused by the increase in the number of trains run, more effective ticket checking, and more settled conditions generally. Of goods traffic, which more than doubled in ton-miles compared with the preceding year, 49 per cent consisted of agricultural products, 16 of mining, and 12 of forest produce. During the year the railways carried 350,000 tons of export rice to the port of Rangoon out of a total of 999,000 exported. Normally Burma is the largest surplus rice producing country in the world. The total area of land under cultivation in 1951-52 was estimated at 9,671,700 acres against the prewar figure of 12,000,000. The prevailing high prices of paddy and the encouragement given by the issue of agricultural loans are likely to increase production, and it is hoped that more rice traffic will come to the railways in the near future.

Besides reopening of the Gokteik Viaduct, progress on new works included the preparation by Messrs. Rendel Palmer & Tritton of plans for a new rail/road bridge over the Sittang, completion of preliminary work on the Ava Bridge, and work on the new buildings of Rangoon Passenger Station.

Maintenance Demands on Bridge Design

IT is generally agreed that constantly-increasing costs of labour and materials are forcing up expenditure on the maintenance of railway structures to an alarming extent. Though every effort is being made to halt this process by mechanisation, the substitution of concrete for steel, and many other measures towards economy, one of the most effective is to be found in specific design to that end. Now that many railways are well over 100 years old, it is only to be expected that—apart from the more onerous work they are expected to undertake—their structures should be deteriorating rapidly in quality and condition.

These remarks apply especially to bridges, and, as we have pointed out previously, design in the renewal of superstructures by reconstruction is being more and more influenced by considerations of subsequent maintenance. Unfortunately, such reconstruction can be undertaken only as and when funds, staff, labour, and materials can be made available, and often not fast enough to keep pace with deterioration. The problem of strengthening bridges solely to carry heavier and faster traffic is rather different, and does not seem to be quite so acute here as in America; so long as our bridges can be relied on to stand up to existing traffic without speed restrictions, there is not the same pressure exerted here by operation for their renewal or strengthening.

That new and reconstructed bridges must be designed to minimise maintenance and permit of the maximum use of available resources in preserving older bridge structures is the theme of a paper, "The Design of Structures in Relation to Maintenance and Inspection, Part 1, Bridges," recently presented for discussion at the Institution of Civil Engineers by Mr. Frank Turton. This paper stresses the importance of bridge inspection as being the intelligence on which maintenance programmes are based. Cost of inspection may be high, especially if scaffolding is necessary, and therefore accessibility is one of the points to be considered by the designer. Inaccessibility for painting is also a serious and costly defect in design. Another point to be considered is the question of fatigue in materials. Simplicity, detail, and the true functional use of materials are other targets to be aimed at.

Above all, the designer must never lose sight of the

fact that recurring maintenance costs are just as much to be considered as the initial construction cost of a bridge. This policy forbids any reduction in erection costs if it risks completely satisfactory maintenance. The most satisfactory job will be made of the erection and completion of a span if it is not done literally under traffic, but prior to rolling, launching, or lifting into position. Speed restrictions are also minimised by this procedure.

Mr. Turton expresses doubt about the efficacy of protecting main girder steelwork with concrete encasement and points out that it is also costly. He advocates the use of closed floors made impervious to water, as they enable ballasted track to be continued uninterrupted over a bridge. His first preference in types of bridges is the vault or sheet arch wherever conditions enable it to be used. It certainly has great advantages in point of inspection and maintenance and, he might have added, longevity. The open spandrel arch is also useful where dead load has to be kept down, and also for strengthening existing metal-rib spans.

On the question of materials, it is pointed out that stone and brick, where available and of good quality, are useful for substructures and arching, but not much else. Concrete, on the other hand, can be used for those purposes and also in superstructures if reinforced. If prestressed to ensure its always being in compression under load it becomes a truly functional material of great promise. it should be prefabricated in a specially-equipped factory. If concrete cannot be used, steel should be, and its future maintenance should be considered by the designer in Particular care is necessary in the specification and inspection of concrete work, however, and whenever possible adhering to bold, simple lines without fussy detail so as to facilitate painting. Welding greatly assists in this respect and also saves weight as compared with riveted steelwork, hence its growing popularity, but expert supervision and highly-skilled labour are essential.

British Transport Commission Traffic Receipts

THE advance figures for Period 2 of 1953, the four weeks to February 22, show this to be an unfortunate period for British Railways, of which the total traffic receipts only very slightly exceeded those for the corresponding period of last year; this is not encouraging in the light of increased costs, including a higher wage bill, and despite the successful steps taken to achieve economies. British Railways passenger receipts for the period were almost the same as for the preceding period and as for Period 2 of 1952, but in view of last summer's fare alterations, nothing can be deduced from this without an analysis of receipts and passenger journeys. The slight increase in parcels receipts is disappointing.

Much more serious is the drop in merchandise and livestock traffics, which show an absolute decline over last year's figure, despite a 5 per cent increase in rates: a rise of some £500,000 compared with Period 1 can be explained largely by the incidence in the latter of the New Year and after effects of the Christmas holidays. Merchandise tonnage originating during Period 1 nevertheless was 7 per cent less than a year before, with rates 5 per cent up, whilst receipts were 1·5 per cent down, so that the proportionately greater drop in receipts for Period 2 against the corresponding four weeks of 1952 seems to indicate a proportionately greater decrease in merchandise tonnage originating, assuming roughly the same pattern of consignments, length of haul, and so on.

Mineral receipts seem more or less to reflect the 5 per cent increase in rates, and it is not possible to say whether any considerable change was to be expected. For Period 1 however, when receipts were 9 per cent up on 1952 and rates 5 per cent, tonnage originating also increased by 5 per cent over the corresponding figure for 1952, which points to longer hauls.

British Railways mineral receipts for Period 2 are £134,000 less than for the preceding four weeks, so that there may well have been hauls comparable with this period of 1952 with greater tonnage originating. Coal traffics were well up over the 5 per cent which the 5 per cent rate increase alone would warrant, despite severe weather in the North and Midlands. Assuming the tendency apparent in recent months towards shorter hauls, largely a reversion to shipment of coal to ports instead of longer all-rail journeys, the cause of the increase in coal traffic receipts over Period 2 of 1952 seems to be simply increased production. There was a rise of £700,000, or 8 per cent, over coal traffic receipts for the preceding period, but holidays in Period 1 might account for this.

—	Four weeks to February 22		Inc. or decr.	Aggregate for 8 weeks		Inc. or decr.
	1953	1952		1953	1952	
	£000	£000	£000	£000	£000	£000
British Railways—						
Passengers	6,349	6,328	+ 21	12,707	12,378	+ 329
Parcels, etc., by passenger train	2,759	2,650	+ 109	5,372	5,117	+ 255
Merchandise & livestock	8,446	8,640	− 194	16,368	16,682	− 314
Minerals	3,456	3,291	+ 165	7,046	6,574	+ 472
Coal & coke	9,062	8,271	+ 791	17,424	16,226	+ 1,198
	30,072	29,180	+ 892	58,917	56,977	+ 1,940
British Road Services ...	5,980	5,935	+ 45	11,630	11,740	− 110
Road Passenger Transport : Provincial & Scottish—						
Buses, coaches & trolleybuses	3,077	2,869	+ 208	6,286	5,774	+ 512
London Transport—						
Railways	1,335	1,217	+ 118	2,735	2,446	+ 289
Buses & coaches ...	2,788	2,513	+ 275	5,626	5,031	+ 595
Trolleybuses	661	660	+ 1	1,330	1,325	+ 5
	4,784	4,390	+ 394	9,691	8,802	+ 889
Inland Waterways—						
Tolls	77	76	+ 1	155	150	+ 5
Freight charges, etc. ...	99	100	− 1	197	196	+ 1
	176	176	Nil	352	346	+ 6
Total	44,089	42,550	+ 1,539	86,876	83,639	+ 3,237

British Road Services receipts show a slight increase over those for Period 2 of last year, and are 6 per cent up on Period 1 of this, which is in welcome contrast to the trend since the autumn. The carriage of coast defence materials and flood relief consignments may have helped, though the floods did much to deprive B.R.S. of much important traffic by destroying goods and severing road communications.

B.T.C. provincial and Scottish road passenger receipts were well up on the 1951 figure, but not so well as for Period 1, when they exceeded last year's total by nearly 11 per cent.

London Transport railway and bus receipts were somewhat less than for the preceding four weeks, for which the incidence of holidays and, perhaps, the bad weather in February may account. Because of the increases in fares in 1952, there can be no true comparison with last year's figures.

PERCENTAGE VARIATION 1953 COMPARED WITH 1952

	Four weeks to February 22	Eight weeks to February 22
British Railways—		
Passengers	+ 0·3	+ 2·6
Parcels	+ 4·1	+ 4·9
Merchandise & livestock	− 2·2	− 1·8
Minerals	+ 5·0	+ 7·1
Coal & coke	+ 9·5	+ 7·3
Total	+ 3·0	+ 3·4
British Road Services	+ 0·7	− 0·9
Road Passenger Transport	+ 7·2	+ 8·8
London Transport—		
Railways	+ 9·6	+11·8
Buses & coaches	+10·9	+11·8
Trolleybuses & trams	+ 0·1	+ 0·3
Total	+ 8·9	+10·1
Inland Waterways	—	+ 1·7
Aggregate	+ 3·6	+ 3·8

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Renovation of Hastings Line Steam Stock

February 21

SIR,—The paragraph in your February 20 issue is a reminder that this is the second occasion on which a train completely refurnished and with some internal reconstruction has been put into service between Hastings and London *via* Tunbridge Wells.

The *Railway News* of November 28, 1896, stated that the South Eastern Railway had announced that "an American car train consisting of 1st, 2nd and 3rd class saloon carriages lighted by electricity and warmed throughout by hot water pipes would, commencing on Tuesday, 1 December, run every weekday between Hastings and St. Leonards and Charing Cross." The cars of which that train consisted were not new. They had been built in 1891 by the Gilbert Car Manufacturing Company, U.S.A., but were put together at the S.E.R. works at Ashford and, since March 2, 1892, had been running over the South Eastern company's system. They were rarely used as a complete train but almost invariably in couples or as units attached to the company's ordinary or boat expresses, and they were only for first class ticket holders.

In the autumn of 1896 the cars were withdrawn for reconstruction at Ashford works, to provide a complete train accommodating first, second, and third class ticket holders. Vestibuled connections were added to the six cars and the end platforms were removed. S.E.R. brake vans completed the formation of what was officially known as the "Hastings Car Train."

Yours faithfully,

REGINALD B. FELLOWS

Northwood, Middlesex

Problems of Locomotive Torque

March 7

SIR,—Mr. McArd's article in your February 27 issue sheds less new light on this subject than one would have expected from so able a pen as his; in particular, the conditions obtaining at a start from rest are insufficiently emphasised.

It is many years since I worked in a locomotive drawing office, but my recollection is that in the case of a three-cylinder simple locomotive with equi-spaced cranks (or, in the case of inclined cylinders, with cranks spaced to Mr. McArd's requirements), and a crank : connecting rod ratio of about 1 : 8, there are three positions per revolution in which one cylinder has its crank dead-centred and an adequate port opening to the other two cannot be obtained with conventional valves and valve gear unless the cut-off is as late as 80 per cent. To be effective in the case of tank engines, this should apply to both forward and backward gear.

I do not know of any existing three-cylinder locomotive conforming with these conditions, neither have I ever understood why, when three-cylinder simple propulsion was introduced to British express services in the North-Eastern Class "Z" 4-4-2s, the maximum cut-off was restricted to 65 per cent, unless indeed auxiliary ports were cut in the admission side of the piston valve to bleed steam into the cylinders after the first ring had cut it off.

If Mr. McArd's tractive effort diagrams, Figs. 2, 3, 4 and 5 are to be taken as applying to full gear working at low speed only, it would not be fair to criticise him for their irrelevance to the whole range of locomotive performance. Again, in respect of track and locomotive maintenance (as the two must be to some extent interdependent) is it correct to confine our attention to vertical forces ?

Granting, as we must, the reduction in "hammer-blow" with multi-cylinder simple types, what do we know of the lateral blows inflicted by and on the heavy unsprung crank axle ? It used to be said that Patrick Stirling's eight-foot singles carried an abnormal static weight on their driving axles, but it was also whispered that Mr. Johnson's singles were somewhat prone to develop flaws in their crank axles; if this was happening to the crank axles, what was the effect on the track ?

It was indeed a surprise to read Mr. McArd's advocacy, if one may put it as strongly, of a return to express service by the multi-cylinder 4-4-0 type. Even if the Civil Engineer were to permit Mr. McArd 24 tons per coupled axle in return for less "hammer-blow," it is difficult to envisage less than 24 tons on the bogie, the centre of gravity of a short-boilered locomotive falling where it usually does. We should then be provided with a machine which used only two-thirds of its weight for tractive purposes, and was expected to keep a clean fire on 28½ sq. ft. of grate. Admittedly No. 1054 ran non-stop from London to Edinburgh in 1928, but one suspects that the proportion of nuts to slack in the coal which was consumed was higher than that which obtains today.

In his last paragraph, my old friend and colleague is surely having a little fun at our expense. Was not the unpiloted load limit 245 tons between Leeds and Carlisle for engines of power classification "4," and are these the heavy Scotch expresses to which he refers ? Is the filling of a single 19-in. diameter cylinder, even at late cut-off, a difficult task for the boiler when the wheels are perhaps only making three revs. per sec. ? The type of road suited to the 4-4-0 wheel arrangement is a well-aligned switchback, but for continuous steaming on the level with heavy trains at high speeds there is not the boiler or cylinder capacity available for economical working. The Southern "Schools" class locomotives were the best 4-4-0s in the country and they were no doubt equal to the "King Arthurs" in performance, but not in economy of working.

Yours faithfully,

C. B. HARLEY

15, Crimicar Lane, Sheffield 10

Reconstructed Stock for Southend Line

February 28

SIR,—The article in the issue of February 27, describing vehicles rebuilt on the underframes of stock withdrawn as a result of the Liverpool Street-Shenfield electrification, prompts me to inquire as to the ultimate fate of the remainder of this stock, a considerable quantity of which is now decaying in sundry Essex sidings.

Cannot more of this be rebuilt, and the remainder scrapped to alleviate the steel shortage ? It might be possible to have some of the rebuilding carried out by companies normally engaged on the fabrication of bus bodywork, in which industry there is, I believe, some unemployment, and where, given some freedom of design, some good experimental interior arrangements for local work might result from the manufacturers' experience with road vehicles.

The Chelmsford-Shenfield shuttle service appears ideally suited to operation by a three- or four-car diesel set, especially in view of the poor terminal facilities at both ends of the run. Perhaps such a set could comprise three rebodied cars plus one new diesel motor coach, or four cars with a simple two- or three-axle diesel power van or light locomotive in the centre.

Efforts by the Railway Executive, in face of a serious shortage of materials and money, to improve the lot of the poor season-ticket holder, deserve praise and encouragement. But how much better if the Government realised that railways are as essential to national production and defence as, say, the machine tool and aircraft industries, and allowed more steel for new construction and money enough for electrification!

Yours faithfully,

J. RODGERS

"The Cottage," 132, Worrin Road, Shenfield

THE SCRAP HEAP

Plugs for Lavatory Basins

(*See the Scrap Heap for March 6*)

Your correspondent need not wait for standardisation on British Railways. Neither need he carry round with him an assortment of corks. If he can get a heavy solid rubber ball a little larger than a golf ball, he will find that this will be suitable for any plug-hole—from bath size downwards—and make quite a water-tight fit.—*From a letter in "The Times."*

Sidelights on Travel in Spain

A correspondent expresses the view, from his own experience, that travel in Spain is generally a delightfully leisurely process, diversified by incidents that do nothing to detract from an atmosphere of reposeful calm and old-world courtesy not always found elsewhere nowadays. Some Spanish workmen passed through a railway compartment by boarding it on the off-side and alighting on the platform. As they did so each man removed his cap and greeted the passengers with "Buenos dias, Señores," a greeting returned by the passengers with equal courtesy and charm, and absence of surprise or resentment at this infiltration. On another occasion a travelling ticket collector was observed to remove his cap as he passed through the restaurant car. It is not known whether this is general, but surely it is a delightful gesture to emphasise that the mundane commercial arrangement between the railway administration and its customers shall, as far as possible, be removed from their consciousness while participating in the rites of good food !

A Royal "Greyhound" Passes

Class "T9" Drummond 4-4-0 No. 119 (Southern Region No. 30119), the Royal engine of the London & South Western and Southern is being broken up at Ashford. It was built at Nine Elms in 1899, one of 66 engines in the class, which were known colloquially as "Greyhounds."

Urie rebuilt them all with superheater, extended smokebox and stovepipe chimney. Later they were painted black except No. 119 which continued to be painted green and kept in spotless condition for Royal journeys. In 1935, the wheel tyres and bosses of No. 119 were lined out and the tender characters were shaded black, for King George V's journey to Portsmouth for the Jubilee Naval Review, and this livery lasted until 1946.

Finally, No. 119 was transferred from Nine Elms Shed to Dorchester, where, in the words of a correspondent to *The Times*, "she was the special pride of the Dorchester enginemen, who kept her as spick and span as she had ever been, so that on her last journey she shone as brightly in the sun as on her first."

Gift of Clock to Indian Railways

The Swiss Federal Railways have sent a modern ornamental wall clock of superb craftsmanship as a gift to Indian Railways on the occasion of the Indian Railway Centenary on April 16. The clock was presented at a ceremony in New Delhi on March 6 by Dr. Max Graessli, Swiss Minister in India, and was received by Mr. O. V. Alagesan, Deputy Minister for Railways & Transport, on behalf of Indian Railways. The Swiss Minister expressed the admiration of Switzerland, and particularly of the Swiss Federal Railways, for the remarkable progress made by Indian railways during the last century. The Deputy Railway Minister, reciprocating the sentiments expressed by the Swiss envoy, added that India considered the gift as a token of the friendship and affection in which she was held by Switzerland.

It's Cheaper by Rail

A Londoner protested about "exorbitant" charges made by London Transport for the recovery of lost property. When his wife left her wallet containing £4 15s. on a bus she had to pay a registration fee of 2s. 6d. plus 9s. 6d. for its return. "How do they determine the charge and what happens to the money?" he asks. London Transport says that the fee is 6d. in the pound plus 10 per cent of the value when it exceeds £1. Where the property is returned to its owner the 10 per cent goes to staff welfare funds; when it is unclaimed and has to be auctioned half goes to those funds and half towards running the lost property office. All the sixpences go to maintain the office, and London Transport adds that it still costs more than its income.

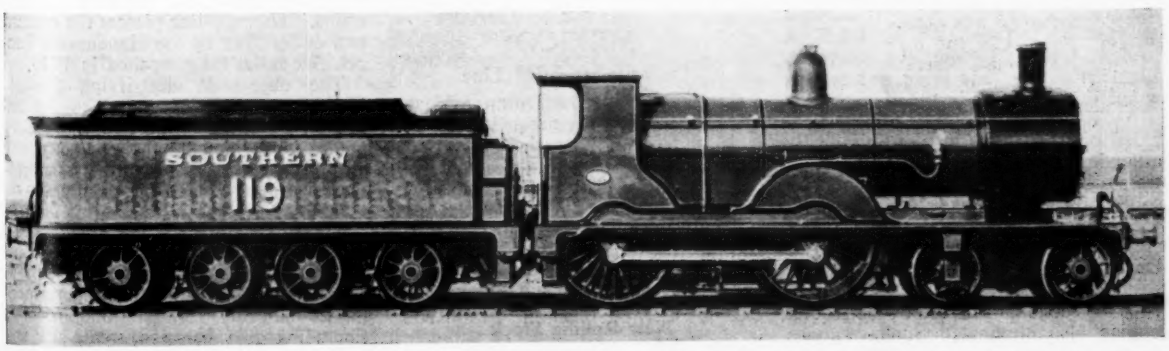
British Railways take a more kindly view of forgetfulness. Their Southern Region (which also loses on its lost property dealings) handles about 112,000 lost articles a year. Leave your dog on a train and it will cost you 4s. 4d. a day, but a wallet stuffed with banknotes will be handed over on payment of 2s. 2d., or for 3s. 4d. if you also forget to inquire about it for a week. — *From "The Manchester Guardian."*

Railway Gardeners

Station staffs on the Western Region of British Railways are actively planning and preparing their gardens in readiness for the Regional Station Gardens Competition, of the 1953 season. When judging is carried out, regard is paid to any special circumstances affecting the station such as situation, nature of soil, and climate; and to the maintenance of a uniform standard of cultivation throughout the season. The general appearance and tidiness of stations is also taken into account.

Wasted Ornament

Another of the strange and evil tendencies of the present day is the decoration of the railroad station . . . Better bury gold in the embankments, than put it in ornaments on the stations. Will a single passenger be willing to pay an increased fare on the South Western, because the columns of the terminus are covered with patterns from Ninevah ?—he will only care less for the Ninevite ivories in the British Museum: or on the North Western, because there are old English-looking spandrils to the roof of the station at Crewe ?—he will only have less pleasure in their prototypes at Crewe House. Railroad architecture has, or would have, a dignity of its own if it were only left to its work. You would not put rings on the fingers of a smith at his anvil.—*From Ruskin's "The Seven Lamps of Architecture."*



Class "T9" 4-4-0 locomotive No. 119 (later British Railways No. 30119 and now withdrawn) when used as the Southern Railway Royal engine

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Bhavnagar-Tarapore Line Survey

A traffic survey of a proposed broad-gauge line from Bhavnagar in Saurashtra to Tarapore, near Cambay in Bombay State, has been ordered by the Central Railway. It is estimated that it would cost about Rs.3,05,00,000 and an 8 per cent return is expected. Before the regrouping, the States of Bhavnagar and Baroda had set aside sums for building the link and these funds are likely to be used.

The line would cut the travelling time between Bombay and Bhavnagar by 10 to 12 hours, and the cost of coal, imported into Saurashtra by the rail-sea route at present, would be halved at least.

WESTERN AUSTRALIA

Mundaring - Mundaring Weir Line

The discontinuance of the Mundaring—Mundaring Weir line was authorised last year. The line, 4¼ miles long, was constructed in 1898 to transport materials for the erection of Mundaring Weir, the storage reservoir which supplies water to the Eastern Goldfields. It was last used for passenger service in July, 1950, and for goods in September, 1951. Since then all passengers have been carried by the railway bus service, and goods traffic, mainly fruit and produce of settlers in the vicinity, has also been conveyed by road.

Mundaring Weir is a popular rendezvous for tourists and picnic parties, and for many years the railway carried large crowds of passengers. The increased use of motorcars diverted this traffic largely to the road, and with the falling-off also of supplies required for the pumping stations, the need for the line became less.

NEW ZEALAND

Crossing Loop on Raurimu Spiral

A crossing loop on the North Island Main Trunk line is being put in at the spiral in the mountainous country between Raurimu and National Park to increase the capacity of this difficult seven-mile section, which takes a loaded train 40 min. to traverse. Eighteen months ago there was serious congestion of traffic in the area.

A "K" class locomotive can haul unaided only 330 tons up the Spiral. By attaching a second engine to southbound trains between Kakahi, a few miles south of Raurimu, and National Park, the tonnage of goods trains was increased to 550. In the second week of December this resulted in 66 trains hauling a gross weight of 24,713 tons over the section. The use of the second engine also eliminated Sunday goods trains, thus saving staff. When the crossing loop, about a mile south of the full circle in the line, comes into use, up and down trains will be able to pass between Raurimu and National Park.

The Raurimu Spiral, completed in 1908 enables trains to surmount the abrupt rise of 714 ft. in seven miles to National Park on the southward journey on an even gradient of 1 in 50 while travelling in a complete circle round three horseshoe curves and through two tunnels. At National Park the line is 2,647 ft. above sea level.

UNITED STATES

The Burlington and Kansas City

The "Centennial Cut-off" of the Chicago, Burlington & Quincy Railroad, completed last October at a total cost of $16,000,000, has reduced the length of that company's route from Chicago to Kansas City from 490 to 466 miles, and has brought almost the whole of it up to fast running standards. On the new line there are no gradients steeper than 1 in 125, and no curves sharper than 87 ch. radius, which will greatly benefit freight traffic operation. The first freight trains began to work over the cut-off on October 28.

On delivery of new rolling stock and after an intensive publicity campaign, the Burlington put into service between Chicago and Kansas City, on February 1, two new stainless steel diesel-hauled streamline passenger trains, the "Kansas City Zephyr," giving an afternoon service, and the overnight "American Royal Zephyr," a greatly accelerated sleeping car version of the previous "American Royal" between the same two cities. The times of the latter, formerly 13 hr. westbound and 12 hr. 25 min. eastbound, have been cut to 9 hr. 55 min. in each direction, and the "Kansas City Zephyr" takes 8¼ hr. westbound and 7 hr. 59 min. eastbound. To serve stations between Galesburg, Quincy, Brookfield, and St. Joseph, at which the "American Royal" stopped before its acceleration, the four-car "Pioneer Zephyr" and "Mark Twain Zephyr" streamline trains have been installed on the 306-mile route between Galesburg and St. Joseph.

MEXICO

Durango-Mazatlán Line

Construction of the Durango-Mazatlán line will be accelerated this year. It is understood that the Department of Communications, in agreement with the Bureau of Railroad Construction, will make available a substantial sum for the work. The line will unite north and north-western States and shorten the distance between Mazatlán and Torreón by more than 600 miles.

New Rolling Stock

The new coaches under construction by the Schindler Works of Switzerland are being delivered. So far 18 first-class coaches and three sleeping cars have arrived. It was expected that further deliveries would make it possible to inaugurate high-speed service between Mexico City and Nuevo Laredo this month.

Stock still to be received includes sleeping cars, dining cars with bar, lounge cars and first class reserved seat coaches.

ARGENTINA

British Railway Staff

The five-year contracts dated March 1, 1948, signed by the Argentine Government with British members of the staff of the railways expired on February 28, and it is generally understood that most of them at least will not be renewed. No indications have been given so far of what will happen to the relatively few British employees still remaining in service, but they will be entitled to a pension and repatriation if desired.

New Locomotives

Four more "P.S.11" class 4-6-2 Caprotti express passenger locomotives built by the Vulcan Foundry Co. Ltd. have recently arrived in Buenos Aires for the General Mitre Railway.

Federico Lacroze Station

Considerable progress is being made with the total reconstruction of the Federico Lacroze terminus of the General Urquiza Railway. The principal feature is a large concourse which is approaching completion. New platforms are in use by the suburban electric trains and direct access to the Buenos Aires underground system has been provided.

SWITZERLAND

Old Hauenstein Line Electrification

Progress has been made in electrification of the old Hauenstein line of the Federal Railways between Sissach and Olten. The section is part of the original Basle-Olten main line, which, however, was much shortened by the building between Sissach and Olten of a more direct line, now electrified and used by through trains. The new line pierces the eastern end of the Jura by the Hauenstein Tunnel, five miles long, opened in 1916.

The object of electrifying the old Hauenstein line is believed to be improvement of operation over the heavy grades and increase in line capacity afforded by diversion of trains as necessary from the new to the old line.

S.F.R. Results for 1952

Provisional figures for 1952 show Federal Railways passenger receipts at fr. 300,441,000, some 10 per cent higher than for 1951, and goods receipts (including also baggage, mail, and express parcels) at fr. 372,792,000, a drop of 3 per cent. Total receipts for 1952 were fr. 733,458,000 (against fr.

715,483,118 for the preceding year) and total working expenditure fr. 519,847,000 (fr. 501,112,402). The working surplus for 1952 therefore was very slightly lower than for 1951.

The decline in freight receipts is attributed to a contraction in imports and to road competition and to a drop in coal traffic in transit from Germany to Italy, though fruit and vegetable transit traffic from Italy and Spain increased. The rise in working expenses was due to increased material prices and staff expenditure.

FRANCE

Point and Crossing Replacement

At Vierzon, on the Paris-Toulouse main line of the South West Region, it became necessary to replace 24 switches and crossings without interrupting traffic. By agreement with the operating department, two to three hours were allowed for each replacement, during which time the old installation was removed, the new track fitting installed and aligned, the track levelled, and electric connections to the signalbox installed.

The complete replacement was accomplished in 37 days, without any interruption or delay to train services.

Pilgrim Traffic

The importance to the S.N.C.F. of pilgrim traffic to Lourdes is emphasised by the fact that some 676,000 pilgrims were conveyed during 1952. Of this number 602,000 travelled in 1,020 special trains.

At the beginning of the 1952 season, twenty-five special sets of coaching stock were made up, the responsibility being allocated between the Est, Nord, Ouest, Sud-Ouest and Sud-Est Regions. In all, there were 267 coaching vehicles and 15 special ambulance coaches, representing approximately 5·7 per cent of the S.N.C.F. serviceable passenger vehicles.

The international aspect of this traffic is of importance. During the year, 115,231 pilgrims came from outside France and 220 special trains were run for them.

Protective Device in Rivet Removal

An employee at the Mézidon Workshops of the S.N.C.F. has developed a protective device to fit over the end of the pneumatic cutting tool used to remove the heads of rivets. The device is made of plastic material and completely covers the cutting edge of the tool. When the head of the rivet flies off it is held inside a form of cap which prevents it from shooting across the workshop to the danger of the operator and other staff. Little experience is required to use the device.

AUSTRIA

Remodelling Vienna Westbahnhof

Work in the main hall of the remodelled Westbahnhof at Vienna was completed recently, simultaneously with inauguration of electric traction between Amstetten and Vienna. In addition, two new platforms were put into service, so that the station now has six new tracks. The remains of the old station buildings will be demolished shortly, which will permit construction of two additional platforms.

The track layout has been modified, all rails being Thermit welded. For the first time in Austria, welding of all rail joints (about 500) was done in the yard itself.

Construction of the new electric locomotive sheds and workshops at Vienna West is also well advanced. The running shed can accommodate 24 electric locomotives on six roads; the shops have four tracks with inspection pits and lifting gear.

IRELAND

"An Tostal" Excursions

During "An Tostal" (the Festival of Ireland), which will be held from April 5 to 26, special excursions will be run by both C.I.E. and the G.N.R.(I.). C.I.E. will offer tours of Dublin. The G.N.R.(I.) tours include one round the Hill of Howth, affording views of the illuminations of Dublin Bay. These trips will be by train and bus to Sutton & Howth and thence by the Company's tramway to the summit of the hill.

Turf-Burning Locomotive

The Minister for Industry & Commerce of the Republic stated recently that the C.I.E. experiments with a turf-burning locomotive had progressed to the stage that running trials had been made, but the Board was developing another idea, which, if successful, would provide an engine capable of working on either oil or turf.

Publications Received

Timber Development Association Statistical Year Book. London, E.C.4. Timber Development Association Limited, 21 College Hill. 10 in. × 8 in. 24 pp. Price 2s. 6d.—Graphs and tables presenting the essentials of official statistics relating to the timber industry have been published in a year book by the Timber Development Association. In some cases the data regarding imports go back to 1920; the latest figures included are for 1951. Consumption of wooden railway sleepers in railways in Great Britain is tabulated for the years 1923 to 1951 inclusive.

Industrial Brazing. By H. R. Brooker and E. V. Beatson. London: Iliffe & Sons, Ltd., Dorset House, Stamford Street, S.E.1, for *Welding & Metal Fabrication.* 8¾ in. × 5½ in. 344 pp. Illustrated. Price 35s.—This book is claimed to be the first full-length, authoritative study of brazing as a process for metal fabrication. It covers in detail all modern brazing methods: torch, furnace, H.F. induction, resistance, salt bath and dip. The special considerations necessary in work on aluminium, stainless steels, beryllium copper, cemented carbides and vacuum tube construction are described separately. A general introduction to the processes and the equipment used is followed by a review of brazing materials and a summation of the known factors governing joint design. Finally, a chapter discusses problems of selecting the most appropriate brazing process for different types of work and makes a useful contribution on methods of inspection and testing. There are over 200 photographs and diagrams showing phases of the processes.

Heavy Duty Wiper Equipment. — An illustrated manual containing salient features of heavy duty windscreen wipers for electric and diesel-electric locomotives and road transport vehicles has recently been issued by Trico-Folberth Limited. The types illustrated include, vacuum, air pressure, and electrically operated equipment. To assist intending purchasers, each type is itemised with relevant dimensions and specifications.

Railway Wagons and Transfer Cars.—A wide range of railway wagons, steel works ingot cars, ladle carriages, and scale and transfer cars is featured in an illustrated brochure issued by Head, Wrightson & Co. Ltd. The various designs have capacities from 10 to 300 tons depending on the duties they are required to perform, whether open-line working, or inter-shop transport of steel ingots, slag, pot metal, iron ore, and so on. Many types are illustrated by photographs and diagrams. The designs include electrically-propelled transfer cars with pneumatically-operated discharge doors and brakes, four-wheel tank wagons, well wagons with six-wheel bogies, and 40-ton ballast and sleeper wagons.

Bakelite Progress.—An illustrated article in the Winter, 1952-53, edition of *Bakelite Progress* describes applications of Warerite materials in the ms. *Saint-Germain* cross-Channel vessel of the French National Railways. Among the forms in which these materials are used are as panelling and table tops in the restaurant and saloon, and for various applications in the cabins, crew quarters, and sleeping saloons, where their combination of attractive appearance with hard wearing qualities has made them particularly appropriate.

Holidays in Spain, Portugal, and the Mediterranean.—The programme of Thos. Cook & Son Ltd. for summer holidays in this region covers Spain, Portugal, the Balearic Islands, Madeira, Gibraltar, Malta, and Cyprus. The last three of these provide a sterling area holiday. The choice of seaside resorts in Portugal, metropolitan Spain, and the Balearics is wide.

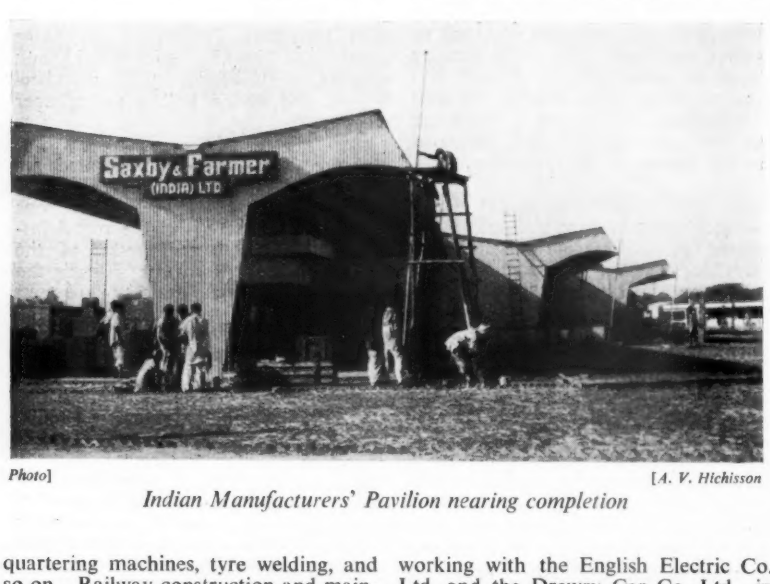
Indian Railways Centenary Exhibition

Equipment by British and Continental manufacturers on show at New Delhi

AN exhibition portraying 100 years of development on the railways of India was opened by the Prime Minister, Sri Jawaharlal Nehru, on March 7. It will remain open until April 16, which will be the centenary of the running of the first train in India when the 21-mile line from Bombay to Thana was inaugurated on that date in 1853.

The exhibition site at New Delhi, near Purana Quila, covers 40 acres. A 100-ft. pylon with spiralling lights is a prominent landmark in the grounds. A special railway station has been provided for dealing with exhibitors' goods traffic, and there is a siding connection with Nizamuddin Station, some five miles from New Delhi. Exhibits have been chosen so as to be educational both to the general public and to railway personnel. Visitors can compare locomotives of former years, such as the first type used between Calcutta and Burdwan, with the latest Indian-built product from the works at Chittaranjan. A two-mile metre-gauge passenger-carrying railway reproducing the features of the Darjeeling-Himalayan line has been laid in the exhibition grounds.

Rolling stock and associated equipment, signalling, railway electrification, and the permanent way are represented. Stationary and working models have been used to demonstrate certain features such as electric, diesel-electric, and gas-turbine locomotives, power-operated signals, and crossing gates. There is a selection of machine tools and other plant of types used exclusively for railway purposes such as wheel lathes, quartering machines, tyre welding, and so on. Railway construction and maintenance is represented by earth-moving machines, mechanised track laying, and welding of rails. Films on these subjects are exhibited at regular intervals and maps, charts, and photographs are displayed in large numbers.



Photo] *[A. V. Hichisson*

Indian Manufacturers' Pavilion nearing completion

Foreign Railways Pavilions

Two pavilions with a floor area of some 20,000 sq. ft. each show the contributions made to Indian railway development past and present by builders of locomotives, rolling stock and railway equipment of all kinds in other countries. Various facilities were arranged to ensure that the contents of these pavilions should be widely representative. Special import licences were issued to exhibitors and their agents, and a one-way freight concession was granted by Indian Railways under which exhibits will be provided with railway transport free of freight charges from New Delhi to the port of loading after the exhibition. The following paragraphs describe exhibits on manufacturers' stands in these pavilions.

Locomotives

The Bombay-Thana line was opened with eight 2-4-0 locomotives sent out to India by windjammer in 1852 from the Vulcan Foundry Limited. In the 100 years that have elapsed the number of Vulcan locomotives supplied to India works out at one a fortnight for the whole period. Models, drawings, and photographs illustrate this historic and continuing association with Indian Railways on the exhibition stand of the Vulcan Group, a term denoting the company's present association with Robert Stephenson & Hawthorns Limited and Spencer Hopwood Limited, and its close working with the English Electric Co. Ltd. and the Drewry Car Co. Ltd., in connection with diesel-electric and diesel-mechanical locomotives respectively.

The centre piece of the stand consists of three models to the scale of 10 mm. to the ft. One of these shows a "WM" class tank locomotive loaded on to a Pickfords heavy road vehicle for transport to the docks. Another display shows in one case and on parallel tracks, models of an "XE" class locomotive alongside one of the first Vulcan locomotives for India, built in 1852. In the third case there is a model of a 3,000-h.p. locomotive for Brazil built by the Vulcan Foundry Limited in association with the English Electric Co. Ltd. Seven similar locomotives are on order with these two companies for the Central Railway of India.

The North British Locomotive Co. Ltd. is showing an actual metre-gauge 4-6-2 passenger locomotive of the "YP" class, of which 100 are now being delivered to India. On its pavilion stand the company illustrates its products for India with models, photographs, and drawings. There are 1½-in. scale models of a "WG" class 2-8-2 and a coal-burning gas turbine locomotive. A Voith-North British torque converter is shown in a full-size sectional model accompanied by drawings. Two locomotives built for India in 1858 and one dating from 1866 are illustrated to recall an association which has resulted in between 6,000 and 7,000 locomotives being delivered to India in the past 95 years, equivalent to an average of six a month over that period.

Rolling Stock

The Metropolitan-Cammell Carriage & Wagon Co. Ltd. is showing models of one of the coaches built for the South African Royal Train, and also a section through a London Transport aluminium coach showing its construction. This company, also, can trace a connection with Indian railways extending over 100 years, for its archives at Saltley still contain original drawings and tracings dated 1851 for second class carriages to be supplied for the Bombay-Thana section of the Great Indian Peninsula Railway. An illustrated brochure, "Linked for 100 years," is being distributed without charge to visitors to the company's exhibition stand. Beginning with the four-wheeler of 1851, and ending with lightweight steel electric motor coaches of 1951, the brochure is of equal interest as a review of technical development as of changing taste in design and appointments.

Scandia Carriage & Wagon Works, of Randers, Denmark, illustrates its products with models of rolling stock and examples of the drop forgings which are another speciality of the company. One model shows a composite coach of a type of which 88 have been built by Scandia for the Danish State Railways, and is used on services between Scandinavia and Southern Europe. The other model is of a Scandia-built sleeping car,

of which 15 have been supplied in recent years to the Norwegian State Railways; four dining cars are at present under construction for the same administration. Numerous photographs of Scandia rolling stock are on show and the pictorial effectiveness of the stand is enhanced by a display of posters loaned by the Danish State Railways.

Vehicle Equipment

Two coaches have been loaned by the Indian Railways to display air-conditioning and other installations supplied by J. Stone & Company (India). One of these is a broad-gauge coach with Stone's air-conditioning, water-raising equipment, drinking water coolers, and fluorescent lighting. The second vehicle is a metre-gauge coach equipped with two units of Stone's compartment type air-conditioning, a system developed to permit the more widespread adoption of this valuable amenity by reducing the initial capital cost of an installation. Five East Indian Railway coaches were air-conditioned by the company in 1937, and 48 ward cars for operation on the same railway were equipped similarly during the war. Since the war these ambulance coaches were converted for ordinary passenger duties and are now running between Bombay and Calcutta.

Freight car air-conditioning is represented on the company's stand in model form, and there is a display of items manufactured at the Stone's works in Calcutta.

Signalling and Brake Equipment

Numerous items of signalling equipment are being shown by Saxby & Farmer (India) Limited, of Calcutta, an associated company of the Westinghouse Brake & Signal Co. Ltd. Exhibits are selected from items manufactured in India and those of the Westinghouse company manufactured in England which are imported. Demonstrations of centralised traffic control are given on the stand and a combined control desk and Westlyte diagram is shown from which various signalling and point machines can be operated and their response observed on the illuminated diagram.

Signalling instruments, and mechanical lever frames, signals, and point mechanisms are also displayed. On the electrical side, a searchlight signal with junction route indicator and a set of hand-generator point-operating equipment are shown. Among other exhibits there is a Miniprinter ticket printing and issuing machine manufactured by the Westinghouse subsidiary, Westinghouse Garrard Ticket Machines Limited. The Saxby & Farmer stand also shows typical vacuum brake cylinders and an electro-pneumatic braking controller.

Examples of other developments in vacuum brake design, manufactured by Gresham & Craven Limited, are seen on the stand of Heatly & Gresham Limited. They comprise the S.J. locomotive ejector, a model of an automatic slack adjuster, a direct-admission valve for rapid brake application, and a slipping band vacuum cylinder. Other vacuum brake equipment is shown on the stand of Gresham & Craven of India in the Indian Manufacturers' section.

General Engineering

A special display has been arranged by the Skefko Ball Bearing Co. Ltd., which was concerned with the supply of the first self-aligning roller bearing axleboxes introduced on the Indian Government Railways in 1928. Exhibits on this stand include sectional full-scale models of typical self-aligning axleboxes for locomotive driving wheels, passenger coaches, and goods wagons. There is also a super-detail model of a modern electric locomotive. The exhibit has been arranged by the SKF Ball Bearing Co. Ltd., of Bombay, an associate company of the Skefko Ball Bearing Co. Ltd., Luton.

British Timken Limited has an exhibit on the stand of William Jacks & Co. Ltd., sole distributor in India of the Timken/Fischer range of bearings. This exhibit is devoted mainly to applications on rolling stock, and an outstanding item is the lateral control cannonbox adopted on 175 locomotives of the "XB," "XC" and "XS" class following the Bihta accident to minimise the effects of shunting. Cannon boxes, similar in design, but differing in detail, are fitted to all the "WP" locomotives, in addition to 12 other classes. Two axleboxes for outboard journals are exhibited, one being sectioned to show the bearing in position. This type of axlebox is even more widely used than the cannonbox, and is found on trailing trucks and tenders of steam locomotives, as well as on coaching stock and the new multiple unit stock in Bombay.

Timken axleboxes are securely mounted with a heavy interference fit, and when a wheel press is not available the mounting and de-mounting can be carried out by means of a small hydraulic press unit, which is also displayed. In addition to the larger bearings used in axleboxes, there is exhibited a number of smaller Timken tapered roller bearings, as well as a selection of ball and parallel roller bearings made by the Fischer Bearings Co. Ltd., a subsidiary company of British Timken Limited.

A variety of exhibits and models of railway engineering interest is shown by the English Steel Corporation Limited. Steel castings displayed include bogie components and various types of couplers. Among the heavy coil and laminated springs on view are springs for wagon bogies, locomotives, and coaches. The exhibits on this stand also include a selection of engineers' cutting tools and permanent magnets for all purposes.

The Associated Locomotive Equipment Co. Ltd. has a working exhibit of British-Caprotti rotary cam valve gear.

In some cases products from several companies are shown on the stands of their agents in India: for example, in addition to the items mentioned earlier, J. Stone (India) is showing water-softening and conditioning plant by the Permutit Co. Ltd., insulators of Pilkington Bros. Ltd., and the Steatite & Porcelain Co. Ltd.; locomotive superheating equipment by the Superheater Co. Ltd., and wheels, tyres, axles and similar components for locomotives and coaches by Taylor Bros. & Co. Ltd.

Further examples of Continental railway engineering practice at the exhibition include a display by Les Ateliers Metallurgiques of Nivelles, Belgium, which is represented on the stand of its Indian agent, Maher Singh Sapuran Singh Chawla. Also on this stand are exhibits by Hamilton & Co. (London) Ltd., maker of paint brushes for railway use, Joseph Tomey & Sons Ltd., manufacturer of gauge glasses and locomotive and other pressure gauges, and Thomas Goldsworthy & Sons Limited, whose abrasives are widely used in railway work.

Alfred Wiseman & Co. Ltd. is displaying specimens of its resilient and other gearwheels and couplings for diesel and electric rolling stock on the stand of Heatley & Gresham Limited, and here also specimens of the wide application of the bearings and other rubber components manufactured by Silentbloc Limited are shown.

Construction Tools

A display of many types of tools, including products used in railway construction, has been arranged by the Bombay branch of the Consolidated Pneumatic Tool Co. Ltd. These comprise portable air compressors, breakers, rock drill pumps and vibrators, and are additional to the extensive range of pneumatic and electric tools produced by the company for railway manufacture and repair shops. Photographs of such tools in use, and sectionalised models, have been contributed to the exhibition by the London branch of the company.

Electric traction and general electrical equipment by Brown Boveri Limited is shown on the stand of the company's sole distributor in India, Volkart Brothers. A pictorial display compares the fixed installations required for traction with direct current and with single-phase alternating current at 50 cycles per second. Also on view is a Brown Boveri cardan drive train-lighting generator of the type in use on new lightweight coaches of the Indian railways.

Instruments and Fittings

The importance of speed measurement and recording in safe railway operation is emphasised by a display of six different types of Hasler telegraph speed indicators and recorders on the stand of Heatley & Gresham Limited. Four working models show instruments of this nature fitted to locomotives and coaches. On the same stand a selection of Beclawat windows and sliding doors manufactured by Beckett, Laycott & Watkinson Limited is displayed.

The mechanisation of administrative and accounting work for railways is represented by machines shown by Hollerith (India) Limited.

Lubrication of Steam Locomotives

Mechanical forced-feed system for providing oil to working points incorporating 4-way oil distributors

AN efficient system for providing lubrication to moving parts of locomotives lessens wear, with a resultant decrease in maintenance costs. It also minimises the degree of inspection in running sheds. Furthermore, any system which avoids, even in part, the use of an oilcan is worthy of consideration during the designing of locomotives.

The accompanying diagram depicts a typical 4-way oil distribution system for a 4-6-0 locomotive, as evolved by C. C. Wakefield & Co. Ltd., using a patent Double Seven mechanical lubricator and 4-way oil distributors, for which a patent application has been made. A feature of the mechanical lubricator is the method of drive, consisting of a roller friction clutch, which it is claimed eliminates backslip and reduces wear.

Mechanical Lubricator

The mechanical lubricator embodies features resulting from the firm's considerable experience of problems connected with the lubrication of steam locomotives. A snuffbox type of filler is incorporated in the lid which minimises the ingress of foreign matter. A sand trap can be fitted to deal with any which may percolate through the lid, a feature of advantage with locomotives operating in areas subject to long periods of drought.

A further protection against foreign matter is provided by coarse and supplementary oil strainers, which together ensure that only clean oil reaches the pump; the strainers are easily removable for cleaning purposes. A reflex sight-glass indicates oil level, and safeguards are provided against unauthorised interference. A plate is fitted inside the filler to prevent damage to the strainer.

Friction Clutch Drive

The roller friction clutch drive consists of two sets of hardened rollers, one set driving the lubricator, the other set preventing backward movement of the eccentric shaft. The rollers work in spiders which operate in a hardened steel race. The external casing is constructed to facilitate easy removal of the assembly; the drive operates with a very small angular swing.

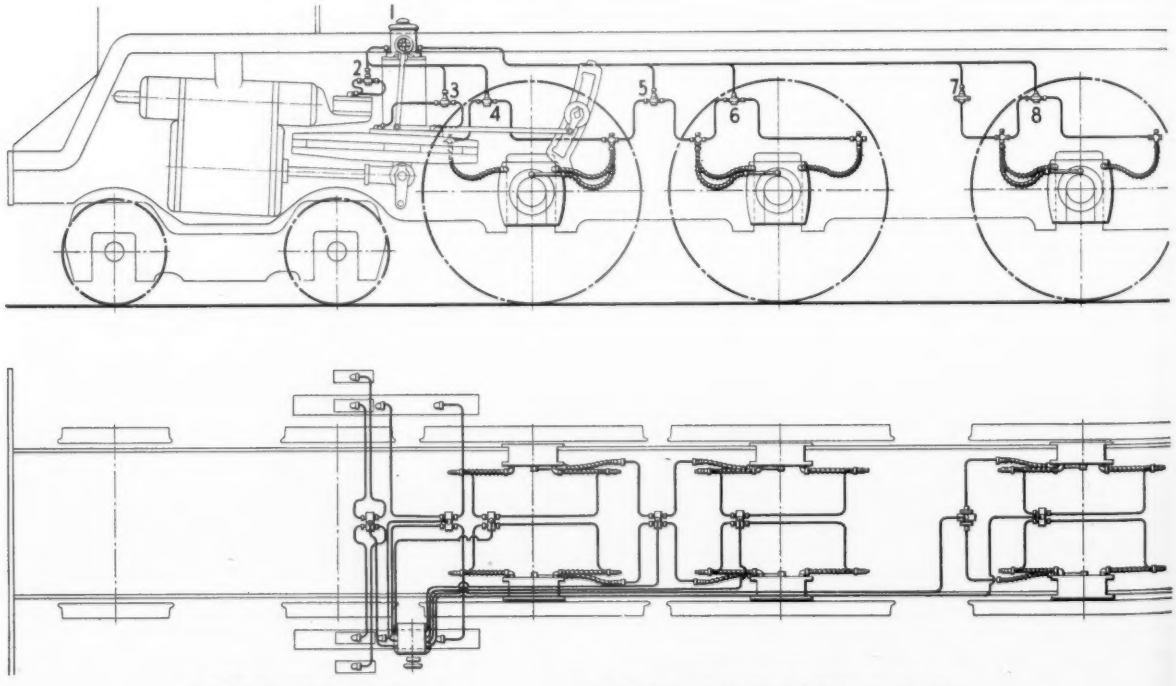
Each individual feed can be adjusted, and the feed settings protected if desired by the inclusion of locking plates. Pump units are arranged in groups of four mounted in carriers of modern design. Renewable wearing pads are fitted to the carriers at points of contact with the driving eccentric shaft.

Oil Distributors

It has not been common practice to lubricate slidebars, valve guides, hornchecks and so on from the main forced-feed mechanical lubrication system. As will be seen from the accompanying diagrams, the system as evolved distributes one supply of oil from the lubricator to four points of application in turn, irrespective of varying resistances to oil flow which may be encountered at the four separate outlets, and permits the forced-feed system to be extended to the various points without risk of over-lubrication.

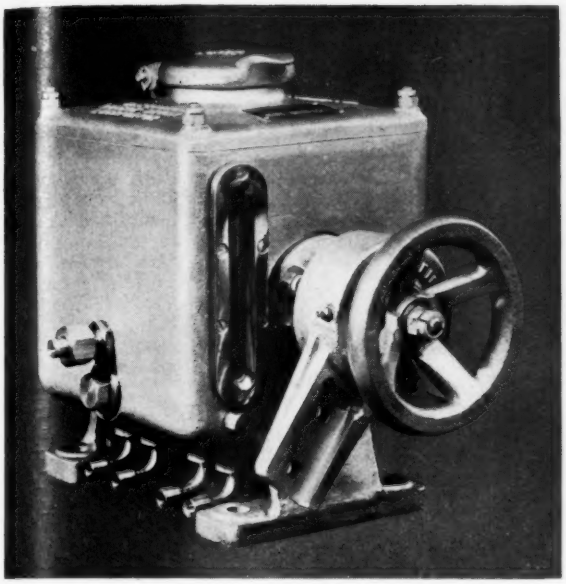
The distributor employs two pistons working in parallel cylinders, mechanically interlocked to ensure that the correct operating sequence is maintained. Oil supplied under pressure from the mechanical lubricator passes alternately to the upper and lower ends of the two piston, and thereby causes them to move in an up-and-down direction.

Each piston, when at either end of its

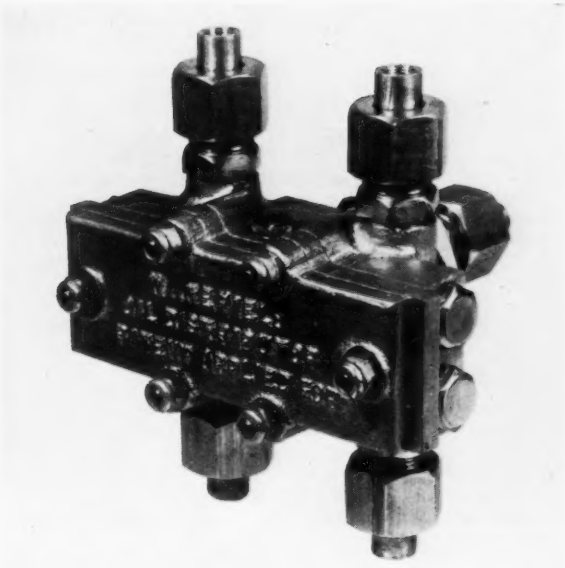


1. Wakefield mechanical lubricator
2. Distributor for valve rod guides
3. Distributor for slidebars
4. Distributor for leading horns
5. Distributor for leading and driving wheelboss faces
6. Distributor for driving horns
7. Distributor for trailing wheelboss faces
8. Distributor for trailing horns

Elevation and plan showing a typical oil distribution system for a 4-6-0 steam locomotive



Wakefield Double Seven mechanical lubricator



Oil distributor showing feed connections

travel, opens ports which control the flow of oil to the other piston; the unit is so designed that one piston only can move at a time. The distributor is capable of clearing any resistance encountered in the outlet pipeline, as the incoming oil pressure will build up until it reaches a pressure great enough to overcome resistance. Adjustment of oil feed to the distributor is obtained by regulating the oil delivery from the mechanical lubricator.

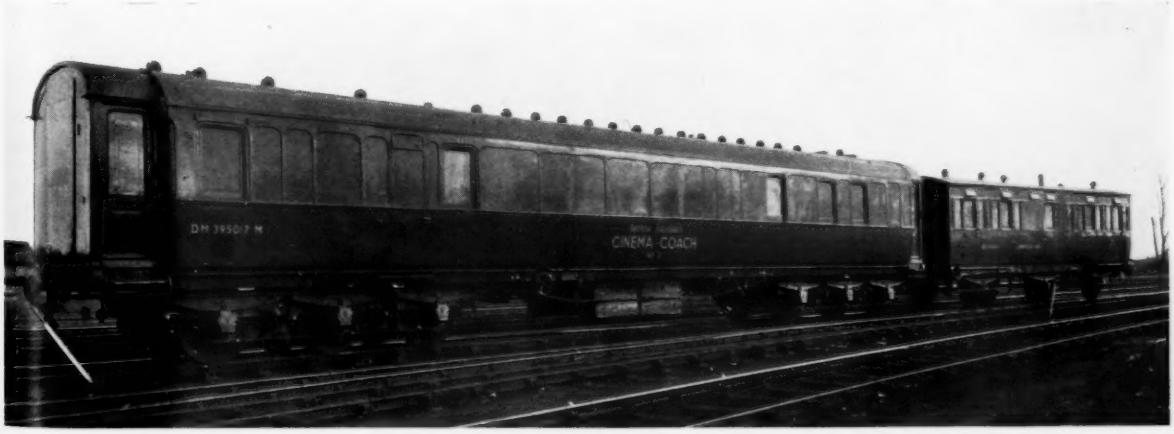
Second Cinema Unit for British Railways

Projector and power supply vehicles

IN order to meet increasing requirements, especially at outlying places, for displaying staff instructional films, British Railways have put a second Cinema Unit into service, the composition of which is illustrated below.

The unit comprises a cinema coach and a second vehicle for carrying the electric generating equipment. The former is an ex-L.M.S.R. cinema coach which has been restored after having been put to other uses during the war and after; it seats 52, and the projector, which is a G.B. Bell & Howell Model 621, is housed in a partitioned projection-room behind the auditorium. As many of the sites to be visited have no convenient electric supply, a diesel generator is provided, and this is necessarily carried in a separate vehicle (an ex-L.N.E.R. third class 6-wheel carriage), since noise and vibration would interfere with the shows if it were built into the cinema coach itself. Conversion of these two vehicles was carried out at Wolverton Carriage & Wagon Works.

The new unit has already been put into service to supplement British Railways Cinema Coach No. 1 (the former Southern Railway unit) in showing to permanent way staff on all regions the first series of civil engineering instructional films made for British Railways by the B.T.C. Films Section. Since January, 1952, Cinema Coach No. 1 has shown these films at over 150 places.



Projector coach with seating for 52, coupled to van containing a diesel-electric set

New Carriage Shed at Willesden, L.M.R.

Progressive system of working enables operations to be concentrated on four roads under cover

A NEW shed for the cleaning and maintenance of London Midland Region main-line coaches and sleeping cars was opened at Willesden on March 9 by Lord Hurcomb, Chairman of the British Transport Commission. The new installations have taken over operations previously carried out in sheds and sidings nearer Willesden Junction Station, and in open carriage sidings to the south of the electric lines station at Stonebridge Park, these premises being still available for stabling stock when required.

A tentative scheme for a carriage depot of 12 lines was approved by the former L.M.S.R. in 1936, and was later reviewed with the object of introducing a progressive system of working. This principle was the basis of the present scheme, in which it has been possible to concentrate the cleaning and maintenance operations in one shed with only four roads, each holding sixteen vehicles. To implement the progressive system of working, in which operations are performed in four stages at different parts of the shed, a system of electrically-driven winches has been installed for drawing coaches forward to the successive working points.

Preparation of Site

The shed and sidings are located on a 27-acre site between the electric lines at Stonebridge Park Station and the Sudbury marshalling yard. Approximately 305,000 cu. yd. of spoil had to be removed to make the site suitable, and a concrete retaining wall 3,000 ft. long and approximately 10 ft. high had to be built alongside the electric lines to obtain sufficient width for the shed and marshalling sidings. A direct connection has been made from the Euston direction at the south-west end of the site by constructing approximately a mile of double track from Harlesden, with a 3-span bridge over the North Circular Road; a connection is also provided at the Wembley end.

The total length of the marshalling and stabling sidings, excluding running loops and roads through the shed, is 8,680 yd., providing accommodation for 434 coaches. The buildings are of welded steel and prefabricated concrete sections. The shed is 1,120 ft. long, with main frames of two hinged welded "I" section portals spanning the full width of 76 ft. 8 in. over the four roads and has roof cladding of protective metal sheeting and patent glazing. Outside the shed there are 15 marshalling sidings and seven stabling sidings equipped with oil, gas, water, steam, and battery charging services; two 30,000 gal. elevated water tanks, and a base exchange water softening plant.

Empty trains travel from Euston on the down fast or slow lines to Willesden, where they cross over to the down empty carriage line and come to a stand at the solutioning machine. At this point the stock is checked to ensure that all windows and ventilators are closed and the particular coaches which require to be brushed with the Oxalic solution are suitably indicated. The train is also inspected for the purpose of releasing any lavatories which may be blocked, a suitable concrete raft with drainage having been installed between the rails.

After the solution has been applied 10 min. elapse before the train is passed through the washing machine to remove all the cleaning solution and dirt. Trains are then drawn through the washing plant into the shunting neck at the Wembley end and then set back into one of the shed roads, the train engine placing only the first five coaches inside the shed under the control of a shunter. After the train engine is released, all subsequent movements through the shed are performed by mules.

Sequence of Operations in Shed

Stage 1 in the progressive system inside the shed is inspection. As the vehicles stand in this stage they are examined and the necessary cleaning and maintenance work indicated. Soiled linen is stripped and tied in bundles for dispatch to the laundry.

The whole train is then moved until the vehicles which have been examined are in stage 2. These vehicles are then cleaned outside whilst maintenance work is proceeding on the inside. Exterior cleaning consists mainly of door handles, coach ends, and the backs of destination boards not accessible to the washing machines. At the same time examination is being carried out on the vehicles following, which are in stage 1.

The third stage comprises the cleaning of the upholstery by vacuum process, washing floors, and similar operations.

In the last stage the stock is equipped with clean bedding, towels, and so on, which are received from the overhead laundry *via* hoists, and finally inspected. When the last vehicle in stage 4 has been completed the whole train is ready for the engine to be attached for the stock to return to Euston, or to be placed on the stabling and marshalling

The new carriage shed and sidings from the Willesden end of the site

sidings. All roads in the shed have normal depth pits extending over the length where examination and maintenance is carried out, and shallow pits over the remainder. Five subways with stairways leading to the pits, floor, or decks are provided in the length of the shed. Two of these are approached by ramps from outside the shed so that tractors with trailers can carry stores to any point required. At two places in the shed special tee-shaped decks, 3 ft. 8 in. high, are placed between each pair of roads to provide support for the tracks on which the mules operate, and to enable staff to gain access to the insides of coaches.

Outdoor Cleaning

Cleaning solution is applied to coach exteriors as arriving trains are propelled at 3 m.p.h. under a machine with sixteen rotating brushes supported from a rigid steel framework spanning the track. Fresh-water pre-rinsing sprays precede the machine and are controlled by the same operator. The machine arms are operated by air pressure. Cleaning solution is pumped up from an underground sump of about 1,000 gal. capacity.

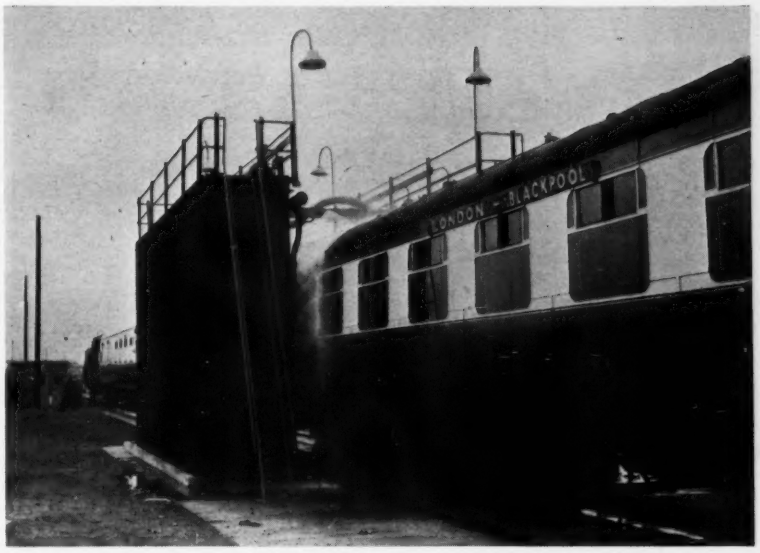
Ten minutes must elapse before vehicles pass through the two washing machines, with vertical flail rotors driven at 50 r.p.m. by 3-h.p. motors. Water draining from the coaches is collected in channels and returned to the two sumps for recirculation.

Haulage Equipment

Each line through the shed is served by two independent mules, making a total of eight. The mule consists of a carriage mounted on rollers running on vertically disposed flat bottom rails, and is winch-hauled by ropes. A hinged arm, raised or lowered by a 1-h.p. motor, engages the buffers of coaches to be moved. A similar motor provides for movement of the bridle to which the haulage rope is attached, to facilitate local adjustment of the mule arm in relation to the vehicles. A rotary exhauster driven by a 5-h.p. motor can be connected to the train vacuum by flexible hose and tee-connector.

Each of the four winches, two at the Wembley end and two at the Willesden end of the shed, is driven by a 150-h.p. squirrel-cage motor through two scoop type fluid couplings. Both scoop tubes are coupled through linkage to a single control level in the driver's cabin. Movement of this lever in the forward direction produces forward movement of the mule, and backward movement of the lever produces a reverse movement or if a train is connected to the mule the required braking effort.

A light signal system ensures that no movement of rolling stock takes place until all staff are clear of the vehicles. Each member or gang leader has a key which he inserts in a control panel and turns when about to work in a coach or on the track. This sets the shed signal lights to red, at which aspect they remain until the key is withdrawn. Lights are then changed to green. While the shed lights are red the winches for hauling the mules are rendered inoperative by interlocking. Corresponding signs are displayed in the subways. Loudspeaker messages supplement the signal system.



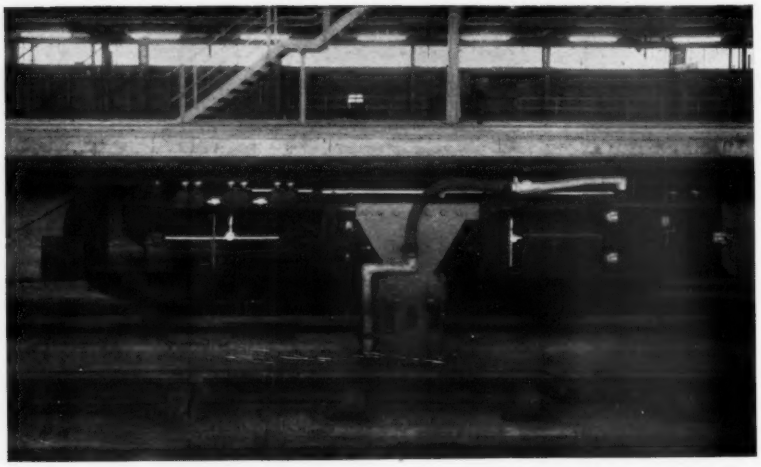
Coaches from Euston passing through the washing plant before setting back into the shed

Interior of shed showing the four roads, inspection pits, and platforms for access to rolling stock

Lighting and Other Services

Lighting inside the shed is designed to give night working conditions similar to those by day. Twin-tube fluorescent fittings are mounted on the side walls at 20-ft. centres at eaves height; single tube fittings are used between roads 1 and 2, and 3 and 4, spaced at 10-ft. centres—all these have instant start gear. The centre row of fittings is mounted at 40-ft. centres and 23 ft. high, but to avoid having to use a multiplicity of fluorescent tubes and yet obtain a similar colour of lighting to the Daylight fluorescent tubes elsewhere, each of these fittings mounts one 50-W. and one 250-W. mercury lamp, and two 80-W. fluorescent tubes. Winches enable the fittings to be lowered for maintenance.

The pits are lighted by fluorescent fittings specially designed in conjunction with British Railways to withstand the rigorous service conditions. Each unit houses one 5-ft. 80-W. lamp located in the lower part of the body to give maximum upward light. The main body is of cast iron, and the front panel is glazed with toughened plate glass, fitted with a gasket impervious to oil. A rubber gland is compressed when the



One of the windlass-hauled mules for moving rolling stock inside the shed. The arm which engages with the vehicle buffers is lowered

frame is secured to the body by captive bolts. The box spanners supplied for this operation are threaded at one end to assist in easing the cover off and lifting it clear of the fitting.

To provide a high level of illumination in the outdoor sidings used for servicing trains, lanterns aligned so that their beams are parallel with the tracks are carried on gantries and are mounted over the six-foot way between each pair of lines.

The gantries, at approximately 180-ft. centres, are constructed of pre-cast, pre-stressed concrete of "U" section. These gantries have spans varying from 60 ft. to 80 ft. and were assembled on site from standard concrete units approximately 6 ft. long, which were stressed together with Freyssinet type cables and lifted into position on pre-cast concrete posts. The "U" section was adopted to enable maintenance men to get easy access to any fitting.

Inside the shed, steam, vacuum cleaning, oil gas, and hot and cold water services are carried overhead with vertical drops to grouped service points on the decks; a system of overhead walkways suspended from the roof is provided for maintenance and for carriage tank filling. The inspection pits are equipped with vacuum testing points, and steam for carriage heating.

An upper floor is provided over the whole width of the shed for a length of 160 ft. and contains the laundry and linen storage rooms. Soiled linen from sleeping cars is lifted by hoist direct into the laundry, and supplies of clean linen are lowered by the same hoist on to the platform, where they are put into the cars. After passing through washing machines, of which there are six, linen is partly dried by means of four hydro-extractors, and subsequently ironed and dried. It is then folded and stored ready for re-issue. The laundry can deal with 80,000 pieces of linen and 4,000 lb. weight of blankets, mattress covers, etc., per week. Sleeping berth carpets are first vacuum-cleaned, and then cleaned by means of a carpet-cleaning machine.

Power Supplies

Two substations fed by 11 kV. cable from Stonebridge Park power station are each equipped with a 1,000 kVA. transformer stepping the input down to 415 V. All L.T. circuit-breakers are remote-controlled from Stonebridge Park. Underground cables run from the substations to the distribution boards. Hand-operated appliances in the shed are fed at 50 V. from centre-tapped transformers to minimise danger from shock. Hot water and low-pressure steam are obtained by means of heat exchangers fed by high pressure steam supplied from Stonebridge Park power station.

There are two groups of open-air sidings:(1) seven stabling sidings fitted with gassing, watering and steam heating facilities; and (2) 15 marshalling sidings fitted with steam heating, gassing, watering, and battery charging facilities. Access to the new carriage sidings is by independent up and down empty carriage lines with connections to the up and down slow and fast lines about one mile from the site.

The Signal & Telecommunication Engineer's Department has been involved in the provision of three new signal boxes, with a total of 90 levers. Apart from four signals on the four shed roads at the entrance to the shed, all signals are semaphores. The four exceptions are colour-lights exhibiting a red aspect permanently. Subsidiary signals operated from the winch control cabins are fixed below each, and are repeated by stencil indicators on a gantry 230 yd. from the shed entrance.

Communications

Two-way loudspeaker communication has been provided between the north frame and the shunters working at the north end of the shed, and also between the middle frame and the marshalling area. Similar facilities were provided under an earlier stage of the scheme between Sudbury Junction signal box and Sudbury Middle Sidings foreman. Each of the two control cabins on roads 1 and 2 can speak to each other or to staff working on roads 1 and 2. The staff on the mule platforms can speak directly to the control cabins from microphones mounted at strategic points on the platforms. Identical facilities are provided for the staff associated with roads 3 and 4. The carriage shed foreman may speak directly to the staff working on either or both of the mule platforms.

A 25-line automatic telephone exchange has been installed to provide full inter-communication between all staff involved in the working of the shed, and external telephone facilities have been made available to certain offices

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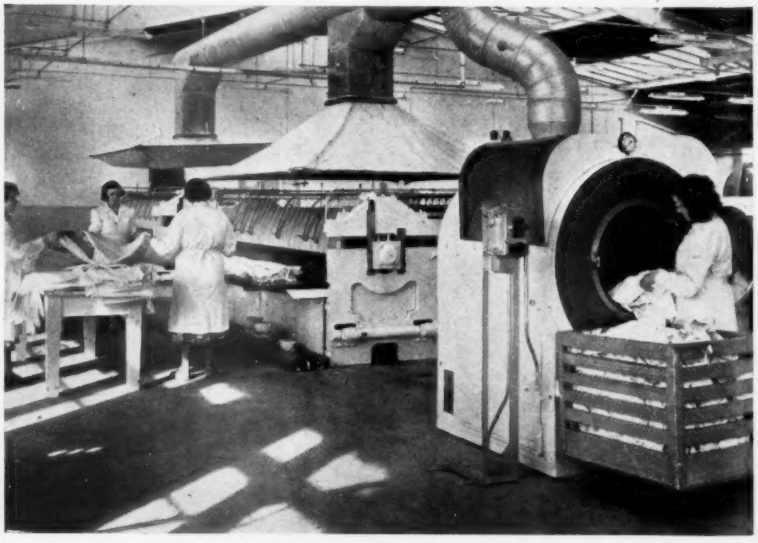


The laundry on an upper floor at one end of the shed, where sleeping car linen is dealt with

All-Dome Coaches on the Milwaukee Railroad

The first ten vehicles of this type are now in service between Chicago and the North West

THE first all-dome coaches in America built for the Chicago, Milwaukee, St. Paul & Pacific Railroad by Pullman-Standard Car Manufacturing Company were placed in service on January 1. Six of the ten cars are assigned to the "Olympian Hiawatha," between Chicago, Milwaukee, St. Paul, Minneapolis, Seattle, and Tacoma, and the other four to the "Morning Hiawatha" and the "Afternoon Hiawatha" day-time streamline trains between Chicago, Milwaukee, St. Paul and Minneapolis.

The vehicles, called Super Dome cars, are being operated in conjunction with the company's "Sky Top" lounge-observation cars, and allow more passengers to view the fine scenery of the Pacific Northwest. The full-length observation-dome section seats 68 passengers in foam rubber cushioned seats which give an unobstructed view through curved glass window sections measuring more than 3 ft. wide and 5 ft. high. Glass in the dome section alone covers 625 sq. ft., more than three-and-a-half times the glass in the conventional dome car.

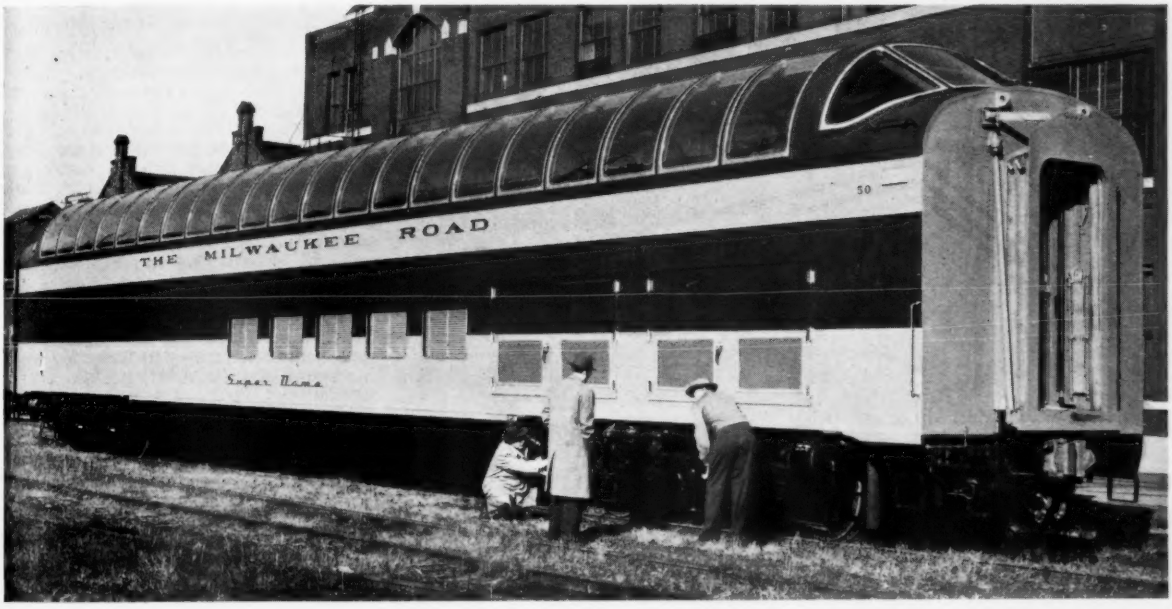
In the lower level, there is a dining and lounge section seating 28 persons where beverages and light snacks may be ordered from an all-electric stainless steel kitchen. To provide adequate head room the dining and lounge section has been sunk below the usual floor level of standard type passenger stock. Passageways on the lower level enable passengers to walk the entire length of the coach without having to go through the dining-lounge section to reach other coaches in the train. Stairways at both ends of the car allow them to walk the full length of the dome section.

The dining and lounge section being sunken and the top of the dome 15½ ft. above the rails, made necessary an important change in the position of all air-conditioning and power equipment, which was installed in two compact compartments, above the bogies, at each end of the coach. Equipment compartments are accessible from the outside, for maintenance at regular division stops, or from the inside, for inspection *en route*. Compartment doors outside the coach are large enough for power plant to be rolled out for servicing and maintenance. Fuel tanks, water tanks, steam traps, air line equipment and other fittings are carried compactly on the underside of the depressed centre portion of the coach.

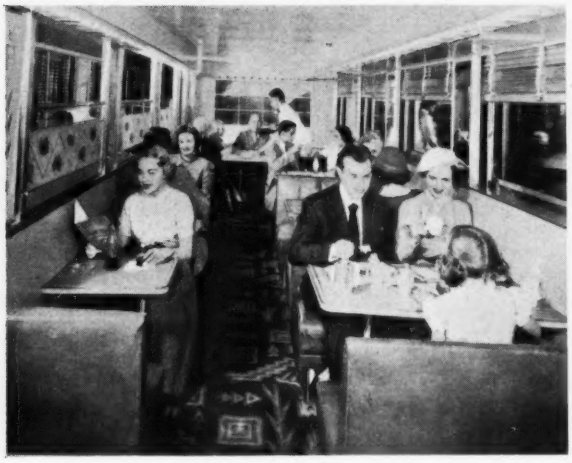
The air-conditioning system has double the capacity of that in orthodox American rolling stock. The refrigeration equipment of each coach could produce 20 tons of ice a day, compared with seven to eight tons of cooling capacity for standard sleeping cars and day coaches. Among the most interesting new features of the heating and cooling system are two "solar discs," outside the dome section on the roof. These small devices supplement the regular thermostatic controls to offset the greater susceptibility of the interior of the coach to changes in outside temperatures resulting from the large expanse of glass in the dome section. They lower the temperature setting of the thermostats automatically to offset the heat from the sun, and when a cloud blacks out the sun the solar discs immediately call for more heat to keep the coach comfortable. Steam from the locomotive is used for heating.

On cool days overhead air ducts provide heat in the dome and lounge sections and when the temperatures drop by floor unit-fin radiators. In the dome section this heat radiates upward through wall panels and through openings in the window ledge to provide protection against the cold wall effect of coach sides and windows.

The upper level of the coach floor is 8 ft. 8 in. above the rail; the lower level, between the front and rear bogies is only 23 in. above the rail. A new type of underframe construction was therefore necessary, and rugged one-piece cast-steel underframe ends more than 24 ft. long were used. The six-wheel bogie is the largest built for a passenger vehicle. The unique feature is its outside spring suspension whereby the large combination bogie centre bolster is supported on outside bolster coil springs.



One of the ten all-dome coaches now operating on the Chicago, Milwaukee, St. Paul & Pacific Railroad



(Left), Dining and lounge section on lower level, and, (right), dome section extending the length of the coach on the upper level

Each coach contains radio loudspeakers, both in the dome and lounge sections, and a public address system for making train announcements. The colour scheme of the interior, lighting, carpeting, upholstery, and all conveniences was designed by the railway's officials in collaboration with Pullman-Standard colour and design studios. The exterior is in the standard Milwaukee colours, harvest orange and royal maroon.

New Carriage Shed at Willesden

(*Concluded from page* 296)

by means of lines to Willesden station telephone exchange, or connections to local omnibus telephone circuits.

There is a fully equipped kitchen, and canteen with seating for 150. The whole scheme cost over three-quarters of a million pounds.

Principal Contractors

The L.M.R. Direct Labour Organisation acted as general contractor. Other contractors were as follow:—

PLANT AND EQUIPMENT

Haulage winches, mules and controls	Henry Lees & Co. Ltd.
10-ton fixed electric goliath crane	John Boyd & Co. (Engineers) Ltd.
Laundry hoists	Geo. Cohen, Sons & Co. Ltd.
Low pressure steam, vacuum cleaning, vacuum testing, gas, hot and cold water mains in shed and sidings and heating installation	Rosser & Russell Limited
Vacuum exhausters (testing), oil gas compressor	Worthington Simpson Limited
Vacuum exhauster (cleaning) ...	Sturtevant Engineering Co. Ltd.
Lagging, low pressure steam and water piping	Bells Asbestos Co. Ltd.
High-pressure steam main and condensate return piping	Aiton & Co. Ltd.
Heat exchanger	Holden & Brooke Limited
Heat exchanger pipework ...	Simmons & Hawker Limited
High pressure steam lagging ...	W. Gilmour Smith & Co. Ltd.
H.T. and L.T. cables	British Insulated Callenders Cables Limited
Transformers and distribution boards. L.T. switchgear	English Electric Co. Ltd.
Wiring for power and lighting and protective system, in shed and buildings	Rashleigh Phipps & Co. Ltd.
Inspection pit lighting fittings	Falk Stadelmann & Co. Ltd.
Lighting fittings	Metropolitan-Vickers Electrical Co. Ltd.
Lighting fittings and sound equipment	General Electric Co. Ltd.
Lighting fittings (laundry). H.T. isolators	Crompton Parkinson Limited
Outside wiring for lighting ...	Bective Electrical Co. Ltd.
Protective key switches ...	Power Equipment Company
Main and break pressure tanks	Northampton Foundry Co. Ltd.
Water softening plant	Permutit Co. Ltd.
Watertight plugs and sockets...	Simmonds & Stokes Limited
Low voltage transformers ...	London Transformer Products Limited

CIVIL ENGINEERING AND BUILDING

Steelwork in shed	John Booth & Son
Precast concrete units ...	Liverpool Artificial Stone Company
Patent glazing	Mellowes & Co. Ltd.
Roof coverings	Robertson Thain Limited
Roof coverings	Vulcanite Limited

LAUNDRY

Washing machines, ironing machines, and Zonda drying tumbler. Also installation work	Thomas Bradford & Co. Ltd.
Air speed drying machine ...	Lister Engineering Co. Ltd.
Sheet spreader	British Laundry Machinery Co. Ltd.
Hydro-extractors	Thomas Broadbent & Sons Limited
Calorifier	Lunbys Limited
Shaker tumbler	R. G. Whitaker Limited
Electrically driven sewing machines	Singer Sewing Machine Co. Ltd.

BROWN BAILEY CAPITAL SCHEME.—Under a special resolution passed in January, 1951, the preference shareholders of Brown Bayley Steels Limited are entitled on a repayment of capital to a premium of 15s. on each £1 share. But payment of this might be treated as a distribution for profits tax purposes, and render recipients liable to surtax on the amount of 15s. a share grossed up by adding back income tax. The company has a capital surplus of not less than £112,500, which has arisen on the winding-up of a subsidiary, and this sum, it is advised, can be treated as capital profit which, if distributed among shareholders, will not render them liable to surtax, nor will there be any deduction for income tax. The directors therefore propose to pay off the preference capital at par, to repay 17s. 6d. on each £1 ordinary share (totalling £262,000) on condition that the ordinary shareholders allow this to be applied on their behalf in paying the preference shareholders 10s. 6d. a share, and also to pay to the preference shareholders a special dividend of 4s. 6d. a share out of the capital profit of £112,500, which would attract additional profits tax of only £23,000. The effect is that the preference shares are repaid at 35s. and that the ordinary shareholders will be entitled to all the remaining assets.

CORYTON REFINERY.—The Vacuum Oil Co. Ltd. has issued an illustrated booklet telling how its refinery at Coryton, Essex, flooded a few hours after it came "on stream" on January 31, was restored to action in 21 days by the combined efforts of 4,000 men involving the spontaneous co-operation of the Army, R.A.F., the Police, and civil organisations with the company's staff and contractors. Copies of the booklet are being distributed to the company's employees, to all the men on the site at Coryton, and to many others in industry and trade, as a tribute to all who worked so hard.

B.T.C. POLICE FIRST AID COMPETITION, 1953.—In the S.W. Area eliminating competition for the British Transport Commission Police 1953 first aid competition, the Dover team was first with 315 marks out of 400, followed by Exeter (304), Cardiff General (303), and Brighton (296). The competition was held at Old Oak Common Hostel, British Railways, Western Region. The adjudicators were Doctor F. H. Taylor, of London, and Doctor C. T. Newnham, Medical Officer, Western Region. Mr. W. W. Wood, Chief of Police, South Western Area, presided at the presentation of prizes. Mr. W. B. Richards, Chief Officer (Police), presented the prizes. The adjudicators were Mr. S. G. Ward, Assistant Regional Staff Officer, Western Region, Mr. E. C. Brashier, Assistant Chief of Police, Mr. P. Anstey, Regional Ambulance Secretary, and Mr. J. A. Martin, Assistant Regional Ambulance Secretary. The Dover team will represent the S.W. Area in the national competition organised by the St. John Ambulance Association at the Central Hall, Westminster, on May 21.

RAILWAY NEWS SECTION

PERSONAL

Mr. N. M. Ayyar, I.C.S., who has been appointed Secretary to the Transport Ministry, Government of India, was born on May 14, 1899. He was educated at the Presidency College in Madras and later at Cambridge, and he subsequently entered the Indian Civil Service in 1922. The first few years of his career were spent in various districts of united Bengal. During 1924-27 he was Assistant Collector of Customs at Calcutta and Madras. Thereafter, until 1936, he worked as District Magistrate, District Judge, and in various other capacities. From 1936 to 1942 he was with the Government of India as Deputy Secretary to the Industries Department, and then as the first Chairman of the Coal Mines Stowing Board. Later, he served for a term as Secretary to the Supply Department, Government of Bengal, and then as Provincial Transport Commissioner. In 1947, he was appointed Chairman of the Commissioners for the Port of Calcutta. During his tenure as Chairman he has been instrumental in introducing important changes such as decasualisation of dock labour, gradual Indianisation of the services, rationalisation of pay scales of Class III and Class IV employees, and changes in procedure affecting day to day administration of the port.

We regret to record the death on March 6, at the age of 59, of Mr. Ernest Pugson, O.B.E., formerly Chief Officer (Carriage & Wagon Construction Maintenance), Railway Executive. We referred to Mr. Pugson's retirement, which took place prematurely for reasons of ill-health, in our February 27 issue, when we published a photograph and details of his career.

The funeral, which was attended by a large and representative gathering of Officers of British Railways, took place at Efford Crematorium, Plymouth, on Tuesday, March 10. In addition to family mourners, among those present were:—

Railway Executive: Messrs. R. A. Riddles (Member, also representing the Railway Executive), R. C. Bond, Chief Officer (Locomotive Construction & Maintenance), A. E. Robson, Acting Chief Officer (Carriage & Wagon Construction & Maintenance), S. B. Warder, Chief Officer (Electrical Engineering), A. E. C. Dent, Executive Officer (Road Motor Engineering), F. J. Pepper, Executive Officer (Wagons), G. T. Smithyman, Executive Officer (Carriage & Wagon Production), H. C. Foster, Personal Assistant to Mr. Pugson, and Mrs. Foster; Messrs. W. Rhodes, Technical Assistant to Mr. Pugson, R. F. Drew, and Miss D. M. Huffer, personal staff.

London Midland Region: Messrs. H. Randle, Carriage & Wagon Engineer, Derby (also representing Mr. J. W. Watkins, Chief Regional Officer), E. Stanley, Assistant Carriage & Wagon Engineer, Derby (also representing Mr. J. F. Harrison, Mechanical & Electrical Engineer, Derby), H. N. Brunt (representing Mr. A. E. Peters, Works Superintendent, Wolverton), W. Turner (representing Carriage & Wagon Foreman Inspectors' Association), W. J. Jones (representing Supervisory Staff, Wolverton Works), A. E. Bates, Works Superintendent, Derby, H. E. Kemp, Works Manager, Earlestown, T. Howard, Carriage & Wagon Department, Derby, G. Lyons.

North Eastern Region: Mr. A. Poole (representing Mr. L. Reeves, Acting Carriage & Wagon Engineer).

Western Region: Messrs. C. T. Roberts, Carriage & Wagon Engineer, Swindon, H. I. Crook, Assistant Carriage & Wagon Engineer, Swindon, R. A. Smeddle, Mechanical & Electrical Engineer, Swindon.

Southern Region: Messrs. F. B. Illston, Assistant Carriage & Wagon Engineer (also representing Mr. F. Munns, Carriage & Wagon Engineer, Eastleigh), C. E. Collins, Works Manager, Lancing.

Scottish Region: Messrs. J. Blair, Carriage & Wagon Engineer, Glasgow, E. A. Milne, former Carriage & Wagon Engineer, Glasgow.

Mr. N. M. Ayyar
Appointed Secretary, Transport Ministry, Government of India

Ernest Pugson—An Appreciation

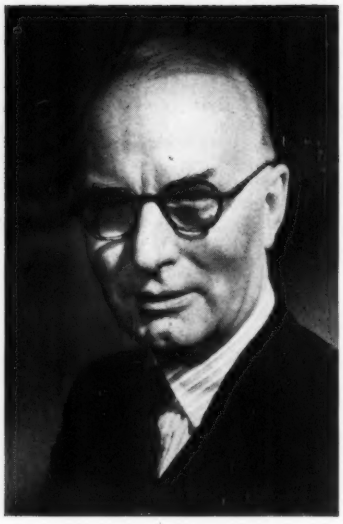
Ernest Pugson, affectionately known to his colleagues as "Puggy" was an outstanding character in the railway world. Starting at the very bottom he rose to the top of his chosen profession, not by the kindness of friends or influence, but through sheer hard work and knowledge, with a complete understanding of his problems which could only be obtained through experience, and for which no text book was ever written. He not only served, but was relied upon to produce the answers for such men as R. W. Reid, Sir Ernest Lemon, Sir William Stanier, C. E. Fairburn, H. G. Ivatt, and finally the Railway Executive of British Railways. That he stood the test of all these demands is no surprise to those of us who knew him. The work that he did during the war was of immense value to the nation, covering as it did aeroplane construction and repair, the manufacture of war materials and the production of hospital trains, in addition to the general maintenance of the carriages and wagons of his own Company. This entailed working under maximum pressure for long periods, including weekends, for months at a time, and for this great work he was awarded the O.B.E. There is no question that as a result both of his war work, and the work that he has carried out since, also at very high pressure, his end was greatly hastened, and his bravery and courage in carrying on with his work, although in failing health, was beyond question. He was respected and admired by the carriage and wagon building, and wagon repairing industries, notwithstanding the fact that no one worked harder than he to produce his carriages and wagons, or do his repairs, at less cost than they, and in manufacturing activities he was in the forefront of economical organisation. His schemes for workshop layouts have been innumerable, and will stand as a memorial to him for many years to come. It can truly be said that in this country he was the authority on carriage and wagon work. For many many years he has worked to obtain a first-rate wagon fleet, and it is very hard indeed that when this accomplishment is so near that he should not be here to see it. As a man he was of the most lovable character. All those around him worked not only with the greatest enthusiasm but with real affection, and no request from him was too much for them to fulfil. With other departments his honest and open manner brought him many friends, and his forthright utterances brought conviction with determination which undoubtedly was the secret of his success. There are a great many who have not only lost a valuable colleague, but a very dear friend as well.

R. A. R.

Mr. C. R. B. James has been appointed a Director of the Emu Bay Railway Company.

The Viscount Bridgeman has been appointed a Director of Robert Stephenson & Hawthorns Limited.

Mr. Gerald Collingwood, Managing Director of Robert Stephenson & Hawthorns Limited, has been appointed Chairman of this company in place of the late Brigadier James Storar.



Mr. H. W. Brooksbank

Appointed Fares & Charges Officer, London Transport Executive

Mr. H. P. Harper

Staff Assistant to Mechanical & Electrical and Carriage & Wagon Engineers, Doncaster 1950–53

The late Mr. W. A. Newman

Chief of Motive Power & Rolling Stock, C.P.R., 1949-53

Mr. H. W. Brooksbank, Principal Executive Assistant, Commercial Department, London Transport Executive, who, as recorded in our March 6 issue, has been appointed Fares & Charges Officer, is 50 years of age. He entered the service of the Metropolitan Railway Company in 1919 as a Traffic Apprentice, and in 1922 he was appointed to the Commercial Manager's Office where, after service in the Fares & Rates Office, he became Statistical Assistant to the Commercial Manager. In 1934, on transfer to the London Passenger Transport Board, Mr. Brooksbank entered the Development Office and until 1941 was engaged on traffic investigation. From 1941 to 1946 he was seconded to the Ministry of Aircraft Production as Transport Liaison Officer in the Directorate of Labour. Mr. Brooksbank returned to the Development Office in February, 1946. In July, 1949, he was appointed Senior Executive Assistant in charge of the Fares & Railway Ticket Ordering sections of the Commercial Manager's Office. As from July, 1951, Mr. Brooksbank has been a Principal Executive Assistant in the office of the Commercial Manager, responsible for these sections and the Miscellaneous Traffics sections of the Commercial Manager's Office. Mr. Brooksbank is a Brunel Medallist of the London School of Economics.

Mr. H. P. Harper, Staff Assistant to the Mechanical & Electrical Engineer and Carriage & Wagon Engineer, Eastern & North Eastern Regions, Doncaster, Eastern Region, British Railways, retired on March 3, 1953, after 46 years' service. Mr. Harper started as a clerk in the Carriage & Wagon Department and served under four successive Carriage & Wagon Superintendents on the Great Northern Railway; Mr. H. N. Gresley (later Sir Nigel Gresley), Mr. Edward Thompson, Mr. J. R. Bazin, and Mr. O. V. Bulleid. He was transferred to the L.N.E.R. Chief Mechanical Engineer's Headquarters Office, Kings Cross, in May, 1923, and was appointed Staff & Statistical Assistant in 1939. On the appointment of Mr. Edward Thompson as Chief Mechanical Engineer of the London and North Eastern Railway in 1941, the Headquarters Office was established in Doncaster, and Mr. Harper became Assistant to the Chief Mechanical Engineer (Clerical). In 1950, when the Chief Mechanical Engineer's Office was reorganised so that the mechanical and electrical engineering and carriage and wagon engineering functioned separately, he was appointed Staff Assistant to the Mechanical & Electrical Engineer and Carriage & Wagon Engineer.

We regret to record the death on March 6, in his 64th year, of Mr. William Arthur Newman, C.B.E., Chief of Motive Power & Rolling Stock, Canadian Pacific Railways. Mr. Newman, who played an important part in developing the Canadian aviation industry during the 1914-18 war, was educated at Queen's University, Kingston, Ontario, where he graduated in mechanical engineering. He entered the service of the Canadian Pacific Railway in the Angus Shops, Montreal, in 1911. The next year he transferred to Smith Falls, Ontario, returning after six months to Montreal as a draughtsman in 1912. He was appointed Superintendent of Betterment at Montreal in 1916, and, in 1928, became Chief Mechanical Engineer, a position he held until 1940, when he was loaned to Federal Aircraft Limited, a Crown company, as President & General Manager. From 1940-41 he was in charge of the Canadian aircraft industry as Aircraft Controller in the Department of Munitions & Supply. After the war he organised the Canadian Pacific Railway's Department of Research, of which he was Manager from 1945 until his appointment as Chief of Motive Power & Rolling Stock in 1949. Mr. Newman was a Member of the Engineering Institute of Canada and a Fellow of the American Society of Mechanical Engineers. He worked on the Joint Committee of these two associations for their co-operation in international activities. He was a Past President of the Canadian Railway Club, and a member of the Board of the Engineers' Foundation in the United States.

We regret to record the death on March 6 of Mr. Reginald McPherson, Staff Assistant to the Superintendent of Operation, Southern Region, British Railways, Waterloo. He was born in 1898 and entered the service of the South-Eastern & Chatham Railway in 1912 at Higham. He was employed in various District Offices from 1915 to April, 1943, when he was transferred to Headquarters, attaining the position of Chief Staff Clerk in the Traffic Manager's Office. In January, 1948, he was appointed Staff Assistant to the Superintendent of Operations, Waterloo. Mr. McPherson had a wealth of knowledge and experience which, combined with fair-mindedness and a pleasant personality, won the respect and admiration of all those with whom he came in contact; his loss will be mourned by many friends in all ranks of the railway. The cremation took place on March 11 at Streatham Vale.

Mr. C. W. Clarke, Assistant Commissioner (Engineering), Western Australian Government Railways, is on a visit to this country connected with the design of the "VF" Class locomotives and other equipment on order for the W.A.G.R. Mr. Clarke will be leaving on or about April 15, and will return *via* the U.S.A.

Mr. T. W. Edwards, Joint Managing Director of the Park Gate Iron & Steel Company, has retired from that office. He remains a Director of the company.

Dr. W. L. Lowe-Brown, M.I.C.E., 39, Victoria Street, London, S.W.1, states that he is retiring from his consulting engineering practice on March 24.

Mr. W. D. Wheeler has been appointed Chief Representative in Southern Africa for Messrs. Kennedy & Donkin, consulting engineers. Mr. Wheeler will be in charge of their Johannesburg office.

Mr. J. D. C. Couper, C.B.E., M.I.C.E., M.I.Mech.E., is retiring from Messrs. Livesey & Henderson on March 31, 1953; he will, however, continue to act in the capacity of consultant. The firm, the name of which remains unchanged, will be carried on by the remaining partners, Mr. N. B. Henderson and Mr. A. B. Henderson.

B.T.C. 1953 Charges Scheme Application

Hearing by Transport Tribunal

The Transport Tribunal on March 9 began the hearing of the British Transport Commission's application for approval of its Passenger Charges Scheme, 1953. The hearing is being held at the Royal Geographical Society, Kensington Gore, London. Mr. Hubert Hull is the Chairman. He announced at the opening meeting that having heard the application, he would hear objectors represented by counsel, by solicitors, and others, in the order of their objections. There have been 91 formal objections to the scheme.

Mr. Harold Willis, Q.C., presented the case for the British Transport Commission. He explained that the general effect of the application, if it were approved by the Tribunal, would be that estimated additional revenue would become available for the L.T.E. of £4,980,000 and from the Railway Executive's London lines of about £1,110,000—a total of just over £6,000,000 in a full year. Outside the London area the measures proposed would bring in £500,000 extra revenue.

The very significant point that arose from true appreciation of the nature of the Transport Commission was that if in any year there was a surplus of revenues which was more than sufficient to meet the expenses, that surplus had to be carried forward to the next year. Similarly if there was a deficiency in any year that had to be carried forward to the succeeding year. It was not really in the interests of the travelling public that deficits should be created because sooner or later it was the travelling public itself who would have to make good these deficits.

L.T.E. Budget Scrutinised

The London Transport Executive's budget was in particular subject to scrutiny and that revealed that on the level of current fares it was faced in 1953 with the position that revenues would barely balance working expenses. It was also clear that there had taken place owing to the increase in costs in 1952 a very serious deterioration in the financial position which was applicable following the Tribunal's decision in 1952. The Transport Commission had in his submission taken action which was inevitable in the circumstances, and had decided to seek to restore the position of the London Transport Executive and at the same time to propose corresponding increases in the Railway Executive London line fares and to provide for certain increases in passenger fares outside London.

He did not think that London had been singled out for adverse treatment. London had not been singled out because, as they would hear from the Controller, appropriate action had been taken in connection with other activities of the Commission. Most of these other activities were in a more fortunate position than passengers' fares, in that increases could be introduced without the procedure of a public inquiry. In the case of freight, action was taken as a matter of great urgency in the autumn of last year and an application was made to the Minister to permit a 5 per cent increase in freight charges. The position was that in London they were in effect operating at a loss of something of the order of £100,000 a week, and the Commission took the view that to allow a loss of that kind to continue longer than was inevitable was quite wrong as a matter of policy.

Mr. Willis recalled that on April 15 last year the Minister of Transport had issued a direction, the effect of which was to prevent any increases for rail travel outside London while the direction was in force. The standstill arrangement was estimated to have cost the Transport Commission £700,000. In the London area there was no direction, but as a result of the Government's intervention the Transport Commission agreed to operate the new scheme on a modified basis. This reduced the revenues of the L.T.E. in a full year by £1,200,000.

It remained the policy of the Commission that sub-standard fares—ordinary and early morning fares and sub-standard season ticket rates—were an unfair burden on the ordinary traveller, and that as soon as was reasonably practicable, they should be got rid of.

Sir Reginald Wilson, Comptroller of the British Transport Commission, the first witness called by Mr. Willis, said that passengers were the last to be asked to contribute towards the increased costs. At one time the Commission had hoped that there might even be a substantial surplus towards reducing the deficits of about £40,000,000 which had accumulated during the early years of its existence. In fact, they did not realise that substantial surplus at all. Right from the beginning of 1952 they had an increase in coal prices which cost about £5,000,000 a year, followed by an increase in steel prices costing £2,500,000.

Then, in the Chancellor's budget, they had a further blow since it increased their fuel duty payments by about £5,500,000. At the same time, it became known that their national insurance contributions would be increased by about £1,300,000 a year. Those increases of £14,300,000 occurred at no very great time after the last inquiry.

As though that were not sufficient, it was followed by Government intervention in the Commission's affairs, and it became necessary to make adjustments which cost on the revenue side almost £2,000,000 a year. Whatever hope there was of obtaining a balance was destroyed by the grant of wage increases in the autumn estimated to cost at least £18,000,000. That made drastic action inevitable. When the effect of the wages increases was realised a special review was held almost at once.

Second Day's Hearing

Continuing his evidence at the second day's hearing, Sir Reginald Wilson said that no increase was being asked for in the long-distance fares as these were already higher than the others per mile and were probably making a very substantial contribution to the general finances of British Railways. Seen in isolation, branch line or cross-country traffics made little contribution to the expenses. In many instances they might not even yield the bare cost of providing and moving the trains. The position was not satisfactory, but the remedy did not lie in putting up the fares to match the high costs. It lay elsewhere. Lines which appeared to be permanently uneconomic or unnecessary might have to be closed, and, with lines that had to be retained, the remedy lay in different forms of operation, such as the introduction of the railcar.

Sir Reginald said that they expected to have a small surplus in the Commission as a whole of £2,000,000 if the proposals were approved.

Questioned by Mr. McLaren for the London County Council, Sir Reginald Wilson said that the cheap day fares operated at urban centres outside London did not apply to London, where the standard fare level was lower. The falling off in Central Bus journeys on the London Transport system during off-peak periods had been noted, and they had been advised that a change in policy in regard to off-peak fares was not likely to increase the revenue of London Transport or the Commission.

Developments in Soviet Russia

One of the most important schemes in the present Soviet Five-year Plan is the construction of a line from Chardzhou on the Amu Darya River in Turkestan across the Kara Kum Desert to Kungrad on Lake Aral, and thence northwards to Makat. At Makat it will join the line from Orsk (Ural) to Guriev on the Caspian sea, which is being extended from Guriev to Astrakkan, at the mouth of the Volga. The length of the Chardzhou-Makat line is about 800 miles.

Another new railway, the South Siberian, also about 800 miles long, is being built parallel to and south of the Trans-Siberian Railway, linking existing lines, to form a through route from Akmolinsk to Barnaul and Abakan, in the Sayan Mountains. The section between Barnaul and Stalinsk was opened in 1952. To the west the line from the steel centre of Magnitogorsk and the coal mines of Karaganda, passing through Akmolinsk, was completed before the war. The Akmolinsk-Karaganda section is double-track and electrified. Further east, a branch is being built from Krasnoyarsk on the Trans-Siberian Railway northwards to Yeniseysk. In addition, lines some hundreds of miles long have already been built under the Five-Year Plan in connection with the hydro-electric works at Kuibishev and Stalingrad.

On all these works mechanisation is being resorted to on a large scale. It is stated that on the South Siberian Railway alone thousands of excavators, lorries, bulldozers, scrapers and rail-laying machines are being used. The work includes many large bridges and numerous small bridges as well as the erection of entire new towns, built with prefabricated units using industrial production methods. On the South Siberian Railway considerable earthworks have had to be carried out at all times of the year, in spite of snow up to 23 ft. deep at times.

Apart from the construction of new railways, the Five-Year Plan covers the doubling of long sections of existing railways, and the electrification of others. All rolling stock is being fitted with roller bearings and automatic couplings. Most new stock is all-metal. The automatic block system and an automatic system of stopping trains which have overrun signals at danger is being introduced on many sections. Hump marshalling yards are being mechanised, reducing the wagon turn-round time by 18 per cent in 1955, compared with that obtaining in 1950.

XUM

Institution of Locomotive Engineers' Annual Luncheon

Record gathering addressed by Minister of Transport

The annual luncheon of the Institution of Locomotive Engineers was held at the Dorchester hotel, Park Lane, on March 6, with Mr. C. M. Cock, President of the Institution, in the chair. Mr. Alan Lennox-Boyd, Minister of Transport, was the principal guest.

Mr. Alan Lennox-Boyd, proposing the toast of "the Institution," coupled with the name of the President, said he was glad to be the guest of a body of men who had used our greatest national wealth —technical skill and craftsmanship—to advance British prestige throughout the world. For 42 years their institution, and for generations before, many craftsmen had established and raised British prestige in the field of locomotive engineering to its present unsurpassable level, and he hoped they realised how much this was appreciated by their fellow citizens, who knew that whatever troubles might come to us, it was in the field of skilled craftsmanship that our final hope of survival lay.

Transport Bill Progress

In the next few months he hoped to be able to visit railway workshops. At present the Transport Bill was being tackled in the House of Lords, and if anybody believed that under the Tory government the House of Lords was only a rubber stamp, he advised them to look at his personal diary and the order papers. Many problems lay before the transport industry, some of them political, such as shortage of capital, which might rob the country of the fruits of inventiveness. There were other problems, such as reconciling standardisation with individual initiative; here the institution's experience would be of the greatest value.

As their Chairman they had a man with a world-wide reputation in locomotive engineering, and he quoted his work for the Southern Railway, the Railway Executive, and the English Electric Co. Ltd. In the war Mr. Cock had been recalled from service with the Indian Navy when pressure on the Indian railways became intolerable. Not the least of his qualifications was that he had been born in Australia.

As Minister of Civil Aviation, Mr. Lennox-Boyd concluded, he was well aware of how communications had been accelerated by air transport, but whatever the speeding-up by air might be, there would still be an enormous rôle to be played by the locomotives and rolling stock of the world, and he was proud to protect the interests of a great guild of craftsmen.

Mr. C. M. Cock, replying to the toast, said they had a record attendance of 671, or 80 more than the year before. In 1952 locomotive and rolling stock exports totalled £37 million. The steam locomotive department by no means had predomination, although it seemed to get most of the glamour. It suffered from severe indigestion with regard to coal consumption, but remained the backbone of rail transport throughout the world. He foresaw difficulties in converting some individual members of the institution to others forms of traction.

The Minister had referred to their common interest in yachting, and would therefore be aware that the prevailing wind here was south-westerly. This fact might even be used to propel rail traffic in a northward direction, but to come back again it would be necessary to have recourse to a colossal number of windmills. The British Electricity Authority had already installed some windmills, perhaps in anticipation of this ingenious idea. He thought people would get so tired of dirt and other inconveniences that they would insist on other methods of traction, such as electrification. Many people in high places became startled when faced with the huge capital investment involved, but this would bring a correspondingly huge saving in expenditure and other benefits. He hoped that after the Transport Bill, the Minister would find time to study this very important matter of improving our rail transport services.

Mr. K. J. Cook, proposing "The Guests," said how happy they were to have with them such a large number of eminent visitors, representing the Mother of Parliaments and the administrations of many parts of the Empire, as well as the Senior Crown Agent, the President of the Netherlands Railways, and representatives of other technical institutions. Their principal guest, Mr. Lennox-Boyd, had distinguished himself by his very close contact with the administration of British Railways. He hoped he could obtain refreshment by listening to the clear, rhythmic beat of the steam locomotive while there were still some left. Sir John Calder would be laying down his post shortly and this would be the last occasion on which he would be with them as Senior Crown Agent. He therefore proposed the toast of the guests coupled with the name of Sir John Calder.

Sir John Calder, in reply, expressed his indebtedness to Mr. Watson, who had retired from the post of Engineer-in-Chief to the Crown Agents for the Colonies, and to Mr. Campbell, their present Chief Mechanical Engineer and a Past-President of the Institution. The Crown Agents had been formed almost exactly 120 years ago. The Crown they represented was the Crown in the Colonies, and that Crown was still indivisible from the Crown in this country. They were one of those British institutions which had grown up to meet needs as they developed, and a lasting mystery to every logically-minded foreigner. Their staff was over 1,200, and last year they shipped over £65 million worth of goods to their principals.

Congratulations to India

The President reminded the gathering that March 7 was the centenary of Indian railways, and read the text of the following telegram to the Secretary of the Indian Railway Board: "Best wishes to the Indian railways in their centenary year from the Institution of Locomotive Engineers assembled at their annual luncheon today." He then introduced the President-Elect, Mr. R. C. Bond, who, he said, was now responsible for the construction and maintenance of some 19,000 steam locomotives, but had once gone out to India as a representative of the Vulcan Foundry to put some electric locomotives into service.

Mr. R. C. Bond, in acknowledgment, said he thought it fair to say that the prestige of the institution had grown and was growing, and they had built up a tradition which he would do his utmost to sustain and enhance.

Among those present were:—

Messrs E. Adams, J. M. Adams, W. M. Adey, W. A. Agnew, W. Aish, J. D. Aitchison, L. B. Alexander, E. L. Allen, E. Allsop, C. G. Anderson, H. Andrew, B. W. Anwell, S. Appleyard, A. Arbuthnott, R. Arbuthnott, S. V. Arnold, W. J. Ash, M. Ashiq, E. S. Aslett, J. Astbury, Lt.-Colonel C. R. Atkins.

Messrs. H. Badger, G. H. Bailey, A. E. Baker, B. Baker, E. W. Baker, C. Balakrishnan, F. J. Bance, S. Barber, D. Barnden, D. S. M. Barrie, T. W. Barrow, H. H. C. Barton, A. H. Baughen, A. E. Beacham, J. Beard, F. H. Beasant, P. C. Beastall, J. E. Beckett, G. V. Beesley, J. Beesley, G. A. Bell, Brigadier P. K. Benner.

Messrs. H. Bennett, G. F. E. Best, Colonel F. Biddulph, Lt.-Colonel Bigg-Wither, Messrs. S. J. Billett, G. S. Bingham, C. K. Bird, P. M. Bishop, R. W. Black, W. R. Black, C. L. Blackburn, H. B. Blackstone, C. N. Blakeney, G. J. Blattman, R. W. Boardman, A. B. Boath, R. C. Bond, C. Bostock, R. P. Bower, H. G. Bown, Sir Archibald Boyd.

Messrs. T. C. Boyd, R. Brearley, R. J. Bressey, J. K. Bridcut, G. C. Brinkworth, W. B. Broadbent, E. H. Brooke, D. C. Brown, D. F. Brown, E. R. Brown, G. Brown, H. Brown, J. G. Bruce, Dr. Buchan, Messrs. P. J. M. Buchanan, H. R. Buckland, E. Bucklow, H. C. Bull, C. Bullard, T. Bullivant, F. G. Burland, H. Burley, M. G. Burrows, S. C. Burt, D. C. Burton, F. B. Butler, H. L. Butler.

Mr. N. G. Cadman, Sir John Calder, Messrs. J. Calderwood, J. E. Calverley, A. Campbell, N. M. Cann, Colonel K. Cantlie, Messrs. E. J. Card, D. Carvill, H. G. Catterall, J. Cave, C. A. Challinor, C. W. Challys-Sowerby, J. W. P. Chalmers, A. J. Chambers, D. G. Chapman, E. E. Chapman, M. R. Chapman, A. S. C. Chattey, A. T. Cheesley, H. Cheetham, T. E. Chrimes, J. M. Chrystal, Colonel H. E. Clark, Messrs. H. G. Clark, D. G. Clarke, E. Claxton, S. T. Clayton, C. F. Cleaver, A. S. Clegg, C. M. Cock, C. S. Cocks, A. F. Collins, C. E. Collins, Colonel G. Collingwood.

Messrs. H. T. Collinswood, J. N. Compton, A. E. Cook, K. J. Cook, B. W. C. Cooke, J. Cooke, E. C. Cookson, Sir V. Coomaraswamy, Messrs. B. K. Cooper, D. F. Cooper, J. Cooper, R. S. Cooper, S. E. Coppen, A. G. Corrie, P. Corrie, R. Corrie, H. P. R. Coveney, E. S. Cox, Sir H. Roxbee Cox, Mr. T. Coxon, Sir John Cradock-Hartopp, Messrs. W. A. L. Creighton, W. N. Crimp, H. F. Cronin, H. W. Crosthwait, T. A. Crowe, Brigadier Cummin, Mr. C. R. Curry.

Messrs. J. Dale, A. C. C. Damant, Captain H. M. Dannatt, Messrs. E. O. Daum, S. C. Davey, Maj. General A. E. Davidson, Messrs. A. S. Davidson, H. Davies, A. L. B. Dawson, C. R. Dawson, D. Dawson, A. J. Day, L. F. Day, H. E. Dean, E. W. Dench, A. E. C. Dent, S. R. Devlin, F. Dickson, E. W. Ditchburn, V. F. Dittrich, W. H. Dixon, V. H. Drewry, T. Driscoll, A. R. Driver, R. J. Drury, S. D. Duff, J. W. Duggan, R. G. Duncan, A. G. Dunn, F. L. Dunster, A. W. J. Dymond.

Messrs. K. N. Eckhard, E. R. Edwards, H. N. Edwards, L. Edwards, R. G. Egalton, F. O. Ellis, G. E. Embleton, J. A. Esplin, E. Etherington, A. J. Fabrini, J. Farr, E. K. Featherstone, F. Featherstone, A. L. Fielding, J. J. Finlayson, G. Fitch, A. P. Fitzjohn, L. N. Flatt, A. E. Fletcher, G. W. Forder, R. E. Fordham, I. C. Forsyth, S. C. Fossett, A. Fossey, A. L. Foulger, F. C. Fox, G. B. Fox, R. W. Foxlee, A. E. Frost, C. T. Fry.

Messrs. J. B. Gabriel, W. Galloway, C. F. Gardner, D. J. Gatto, Commander H. V. Gaud, Messrs. H. F. S. Gedge, A. J. Gibson, J. L. Gilbert, J. Gillieaux, L. A. Ginger, R. K. Glascodine, A. Gloster, G. E. Godfrey, G. T. Godfrey, G. C. Gold, J. Gold, S. H. Gordon, R. T. Gray, W. T. Gray, K. W. C. Grand, E. W. Greaves, H. Green, J. S. Greenhalgh, E. W. Greensmith, T. Greenwood, E. H. Greet, H. Gresham, J. H. Gresham, S. R. Gresham, R. Gresley.

Messrs. H. Grimsdale, J. R. Grimsdell, L. Grimshaw, J. C. Groocock, D. E. Gudgin, F. W. Gutridge, Sir John Hacking, Messrs. D. W. Hadfield, J. Hadfield, Dr. E. N. Hage, The Hon. L. Hall, Messrs. T. O. M. Halliday, J. P. Hampshire, J. Hannah, L. Hansen, E. W. Hanslip, A. L. Hares. A. J. Harly, F. D. M. Harding, L. W. Harding, W. T. Vizer Harmer, J. F. Harrison, G. T. Hart, G. V. Harvey, R. F. Harvey, Ranald J. Harvey, M. S. Hatchell, C. G. Hatherly, H. J. Heagerty, G. N. Healey, H. L. S. Heap, Sir James Helmore.

Messrs. W. H. Helms, A. B. Henderson, N. Henderson, E. Hewitt, F. A. Hewson, W. E. Hicks, A. Himsley, A. E. Hoare, E. J. Hobbs, H. W. Hobbs, D. G. Hodges, F. Hodges, G. B. Hodges, R. B. Hoff, S. Hogg, H. Holcroft, F. Q. den Hollander, H. H. Holloway, A. Hood, A. G. Hopking, W. Hopkinson, W. G. Hornett, L. E. J. Hoskins. R. Howard, A. A. Howarth, Colonel W. H. Howlett.

Messrs. E. P. Hubbard, F. S. Hudson, J. O. P. Hughes, H. J. Hulme, H. S. Hundleby, E. S. Hunt, G. S. Hussey, J. D. Hutchison, W. Hyde, A. C. Illston, F. B. Illston, R. H. Ingalls, E. Ingoldby, C. C. Inglis, J. W. Innes, R. H. Inness, T. D. Jacobs, G. E. Jarman, A. E. Jefferd, R. B. M. Jenkins, R. Jennings, P. T. Jessop, F. E. Jobson, J. D. Johnson, N. Johnson, A. W. Johnston, E. L. Jones, W. L. Jones.

Messrs. S. W. Kaye, L. M. Keegan, I. V. Keene, G. Kefford, A. J. G. Kett, W. Kelway-Bamber, E. Kent, A. Kenyon, J. W. G. Kershaw, G. Key, S. King, A. J. D. Kitson, T. Kneale, E. B. Knee, D. R. Lamb, T. T. Lambe, A. Lamm, T. S. Lascelles, W. H. Lawrence, W. L. Lawrie, E. Lawton, H. Lawton, H. Ledger, F. Leach, R. H. Lee, K. H. Leech, Lt.-Colonel G. A. B. Leishman.

Messrs. G. A. Leitch, G. A. Lemon, A. T. Lennox-Boyd, M. H. P. A. LeVie, J. D. Lewis, Martin Lewis, Sir John Lienhop, Messrs. G. J. A Lindenberg, E. E. Lloyd, J. H. P. Lloyd, M. C. Lloyd, R. E. Lloyd, F. G. Lockwood, S. N. Loosen, F. Lord, S. E. Lord, W. D. Lorimer, E. D. Lottin, M. D. Lowndes, A. S. Lucas, The Hon. R. G. Lyttelton, Messrs. A. C. Maby, C. G. Mackie, J. Pelham Maitland, N. W. Manby, R. E. Marks, A. W. Manser, C. G. Marsh. S. W. Marsh, W. H. Marsh, A. N. Marshall, E. K. Marshall, J. H. Marshall, Major V. M. Marshall.

Messrs. E. C. Marsland, E. W. Marten, J. F. Martens, F. G. S. Martin, O. Martin, F. Mason, T. W. Mason, T. Matthewson-Dick, F. G. Maxwell, P. May, R. E. G. Mayhew, C. R. Mayo, C. McCauley, Captain C. R. McCrum, Messrs. I. McGuigan, O. S. McInery, Major H. K. McKee, Messrs. W. McKie, H. Melhuish, L. Melhuish, F. O. Mellors, T. Mensforth, C. L. Metcalfe, J. C. Metcalfe, J. P. Metcalfe, R. Metcalfe, R. D. Metcalfe, J. W. C. Milligan, J. D. Millner, W. H. Milne, W. J. Mitchelhill, Lord Monkswell.

Messrs. E. S. Moore, F. H. Morfey, E. J. Morris, N. H. Morris, J. J. F. Morrison, I. T. Morrow, J. Morton, W. H. Morton, E. B. Moss, A. E. Moulton, E. R. M. Mountague, H. J. S. Moyses, D. J. Muir, F. T. Muncey, Sir Gordon Munro, Messrs. J. Munro, T. J. Murphy, S. Murray-White, G. Mutch.

Messrs. J. R. Naisby, O. S. Naylor, R. Needham, A. C. Needs, G. Negus, R. E. Nelson, E. Nevitt, Dr. E. V. Newling, Messrs. S. Newman, H. Newsam, N. Newsome, W. H. Nicklin, J. C. Nisbet, O. S. Nock, H. G. B. Nolan, A. W. Norman, Major J. W. Norris, Messrs. L. B. Norrish, A. R. S Nutting, W. R. Oaten, E. C. Ottaway, G. T. Owen, R. Owen, J. E. Owston, A. H. C. Page, C. R. Parker, C. E. Parkes, C. R. Pasley, G. H. Passey, G. H. Paulin, S. J. Payne, W. N. Pellow, R. E. Pennoyer, W. Pepper, G. Pettigrew-Smith, W. Pickett, M. K. Pierce, F. D. Playford.

Messrs. D. C. Plyer, S. Polkinghorn, E. Pollard, F. A. Pope, F. J. Pope, S. Potter, T. Potter, C. W. Powell, F. J. Pratt, C. Pritchard, R. H. Pritchard, Sir David Pye, Messrs. H. W. Ralph, G. H. Ramsden, K. B. Rao, W. E. A. Redfearn, Brian Reed, E. B. Rees, J. W. Rees, L. Reeves, W. G. W. Reid, J. R. Rewell, H. R. Reynolds, L. A. Reynolds, W. Rhodes, C. E. Rich, W. Riddell, R. A. Riddles, Colonel G. Rigby.

Messrs. J. L. Riordan, H. E. Robarts, A. E. Roberts, K. S. Robertson, E. A. Robinson, L. H. Robinson, M. D. Robinson, A. E. Robson, L. G. B. Rock, G. Rollason, A. J. Romer, F. B. Rose, E. J. Ross, S. C. Ross, J. Rostron, Frank Rowe, W. F. Rowlinson, Lt.-Colonel H. Rudgard, Messrs. C. Russell, C. F. Ryan, D. M. Ryan, J. O. Sanders, J. E. Sandham, J. G. F. Sampson, A. C. E. Sandberg, A. J. Sanford, S. H. Saunders, T. Schur, N. Schofield, J. Scott, J. I. Scott, I. S. Scott-Maxwell.

Messrs. F. Sedcole, E. W. Selby, S. G. M. Shallard, C. A. Shepherd, F. E. Sheppard, A. W. Shore, F. Shore, M. W. Shorter, L. Sibbit, E. M. Simmonds, A. W. Simmons, G. S. Simmons, E. S. Simpson, F. W. Sinclair, W. O. Skeat, A. D. Smalley, W. A. Smart, A. B. Smith, A. Forbes Smith, A. W. G. Smith, C. Smith, C. L. M. Smith, F. W. J. Smith, Colonel H. F. E Smith, Messrs. H. Somerville Smith, John Smith, J. A. Smith, J. W. Smith, R. T. Smith, S. G. Smith, W. Gilmour Smith, H. S. Smyth, W. A. Smyth, A. H. Sommer, A. K. Southern, J. C. Spencer, F. L. Stafford, Sir William A. Stanier.

Messrs. E. H. Stenning, R. R. Stephens, C. I. Stevens, A. U. Stewart, F. W. Still, T. Stockings, D. T. Strain, W. B. G. Swayne, H. H. Swift, General G. Szlumper, Messrs. J. B. G. Taylor, A. K. Terris, J. W. Terry, H. H. Thackstone, F. Theakston, G. Thomas, J. B. Thom, H. D. Thoms, T. B. L. Thomson, J. N. Thompson, W. Thompson, N. Thorneley, L. J. Tichelly, W. G. Tilling, Major E. B. Todd. Messrs. C. L. Trask, W. G. Trett, Julian S. Tritton, A. E. Turner, F. Turner, H. L. Turner, R. M. Tyrrell, G. Unwin, Lt.-Colonel C. E. Vaughan.

Messrs. H. G. Vaughan, J. F. B. Vidal, C. C. Waddington, C. C. H. Wade, J. R. Walton, J. G. Want, S. B. Warder, W. W. Watkins, W. Watson, W. L. Watson, R. Watson-Smyth, J. C. Way, J. A. Wayte, H. R. Webb, R. E. G. Weddell, E. D. Wells, W. W. Weston, F. S. Whalley, E. Wheatcroft, H. A. A. While, E. T. White, H. B. White, S. I. White, The Hon. Sir Thomas White, Messrs. W. H. White, R. H. Whitelegg, C. E. Whitworth, F. Whyman, R. G. Wickham, H. J. Widdowson, E. A. P. Wijeyeratne.

Messrs. R. S. Wild, H. Wilmot, P. A. Willeard, A. Williams, W. Cyril Williams, R. T. Wilshire, C. Wilson, J. Wilson, W. H. Wilson, A. J. L. Winchester, J. H. Winder, G. A. Witton, G. F. Wix, H. Wood, J. A. Wood, J. B. Woodhan, C. Wordsworth, N. G. Worster, Colonel R. E. S. Yeldham, Messrs. G. Young, P. Young, B. Zavatarelli.

FLUORESCENT LAMP IN CORONATION COLOURS.—A new 5 ft. 80 W. red, white and blue Osram fluorescent tube has been introduced by the General Electric Co. Ltd. for the Coronation. The tripartite colour scheme is obtained by the application of special powders to the inside of the tube. There is no external colouring whatsoever and no deterioration of colour can occur during life. These tubes are available for switch or instant start. They can be used in any existing 5 ft. fitting.

London Transport Stations Proficiency Awards

Charing Cross and Kings Cross stations have won awards in the 1952 station proficiency competition held by the London Transport Executive. Some 230 Underground stations competed; the judging committee awarded marks for courtesy, cleanliness, good traffic handling, and management.

Charing Cross, used by 143,000 persons a day, and served by over 2,600 trains daily on three lines, is the busiest Underground station and wins the award for the second year in succession. Kings Cross handles 136,000 passengers and more than 2,000 trains a day.

The names of the other prize-winning stations, or groups of stations are: Bethnal Green, Central Line; Swiss Cottage Group, Bakerloo Line (Swiss Cottage and St. John's Wood stations); Arnos Grove Group, Piccadilly Line (Arnos Grove, Southgate, and Bounds Green stations); East Finchley, Northern Line; Ruislip Group, Metropolitan Line (Ruislip, Ruislip Manor, and Ickenham stations); Ealing Common Group, District and Piccadilly Lines (Ealing Common and Ealing Broadway stations); Old Street Group, Northern Line (Old Street and Angel stations); and Loughton Station, Central Line.

The ten stationmasters from the winning stations will later be presented with ebony and silver shields which will be displayed in the booking halls of their stations throughout the year.

Travel from the Midlands and North to Scotland

A considerable increase is expected in the numbers of holidaymakers from England visiting Scotland this summer under the "all-inclusive" scheme promoted by leading travel agents in conjunction with British Railways. So popular was this arrangement last year, when "Scottish Tours" expresses started from Manchester and Sheffield, that this year the scheme has been extended to include the Midlands, with departures from Nottingham as well as Manchester. It is stated that bookings already show a 10 per cent increase compared with the same time last year.

Every Saturday from June 13 to September 5 inclusive, special dining car expresses will leave Manchester and Nottingham.

The trains from Nottingham are routed to Edinburgh with stops at Chesterfield, Sheffield, Rotherham, Leeds, Harrogate, Darlington and Newcastle. Those from Manchester will run to Glasgow, stopping at Bolton, Chorley, Preston and Lancaster.

At Glasgow, Edinburgh and ports on the west coast, passengers connect with local rail and steamer services to selected centres. Many will spend eight- or 14-day holidays in Edinburgh, Aberdeen, Rothesay, Dunoon, or in the Trossachs, or alternatively may embark on tours of the Scottish Highlands.

The holidays have been planned by the Creative Tourist Agents' Conference and British Railways to combine the maximum of interest with the minimum of cost. A low inclusive price covers return rail tickets and meals *en route*, including tips: full board and accommodation (including gratuities); and sightseeing excursions by steamer or motorcoach.

XUM

Parliamentary Notes

Transport Bill Committee Stage in House of Lords

During the Committee stage of the Transport Bill, which began on March 9, Lord Silkin moved an amendment to Clause 1 (Disposal of road haulage assets) seeking to delete from the bill the instruction to the Commission to dispose "as quickly as reasonably practicable" of the property held by it; he said the Opposition objected to the emphasis on speed.

The Earl of Selkirk (Lord-in-Waiting) pointed out that a long transitional period would only result in uncertainy.

Earl Jowitt suggested it was unwise to single out speedy disposal when getting the highest price ought to be emphasised.

Viscount Swinton (Secretary of State for Commonwealth Relations) said that this subject had been considered in a businesslike manner by the Government. The worst thing would be a long-drawn-out sale which might be deferred until all hauliers who would benefit by the removal of the 25-mile limit could compete with holders of "A" and "B" licences.

On Clause 2 (Road Haulage Disposals Board), an Opposition amendment to dispense with the Disposals Board was negatived.

Members of Disposals Board

The Earl of Lucan moved an amendment to increase the membership of the Board from six to ten, by adding two members after consultation with the President of the Institute of Chartered Accountants and two from persons not directly or indirectly interested in road transport since nationalisation. The amendment was negatived.

Lord Silkin moved an amendment to delete a clause instructing the B.T.C. to avoid the ownership of transport undertakings being concentrated in too few hands. He said the instruction was far too vague.

Earl de la Warr (Postmaster General) said the Commission might find that it was not in the public interest to sell assets to a body which, in the Commission's view, was a monopoly. He was prepared to undertake that the matter would be reconsidered before the Report Stage.

Lord Silkin withdrew the amendment.

A few minutes before the House rose there was some discussion on the slow rate of progress. Only 14 amendments had been dealt with and, he said, there were more than 130 outstanding.

Vehicles Owned by B.T.C.

On Clause 4 (Transfer of transport units to companies under control of the Commission), Lord Lucas of Chilworth, when the debate was resumed on March 10, moved the first of a series of amendments to increase the vehicles to be retained by the Commission from 4,000 to 16,000. He said it was in the national interest that the basic services at present being provided should be maintained.

There could be no argument for the action of the Government. The real truth was that if the B.T.C. long-distance and basic haulage services, which were too efficient, could be crippled, they would be a far easier prey to competition.

Lord Swinton said this proposal would wreck the Bill, because it would leave the specialised heavy services with the Commission. The B.T.C. would receive 14,000 railway C. & D. vehicles, and would start from that. The Government would concede the increase from six-fifths to five-fourths.

The amendment was, by leave, withdrawn, and a subsequent amendment of the series was negatived.

Lord Lucas moved an amendment to increase the number of vehicles that the Road Haulage Executive might run on general road haulage to 5,848, which was negatived.

Company Basis for Sale of Assets

Lord Selkirk moved a new clause (Transfer of property to companies with a view to the sale of their shares) setting up the method for disposing of the road haulage units. He said that there were three stages involved; the creation of companies, the position of companies when created, and the sale. Companies must be formed with the permission of the Disposals Board, but again the initiative lay with the Commission. Rights and obligations might be passed, and the price at which a unit was made over to a company would be its net value, that was the value on the comission's books. The companies could be unlimited in size.

When companies were formed the Commission was very much in the position of a holding company. It had to obtain licences for vehicles operating in the companies, and could do so in its own name or in the name of the company and would have six months in which to do it. The staff would remain employees of the Commission. A company would be free to carry on business; it would be essentially a going concern. It might sell its own property but could not re-sell it to the Commission without permission of the Disposals Board. Any sale must be in one parcel. It could be either by tender, agreement, or such other way as, by agreement, the Board indicated. The Board had to be satisfied that the price was reasonable.

The scheme was permissive. Proposals must come from the Commission and be approved by the Board. This was not a change of policy. The sale would proceed as quickly as was reasonably practical at the best price.

The new clause was read a second time and added to the Bill.

Delay in Sales

On Clause 5 (Disposal of property otherwise than in transport units), Lord Lucas moved an amendment to conclude the disposal at the end of 1954. He said that delay in the sales would not be in the interests of the Commission, the country, trade, industry, or the taxpayer.

The amendment was negatived.

On Clause 6 (B.T.C. vehicles to require licences but to be free from 25-mile limit), Lord Teynham moved an amendment to limit the sale of the Comission's units to a total number of vehicles comparable with those actually in use. The Road Haulage Executive had something like 6,500 not in use because no traffic was available. If the Commission were allowed to license all these vehicles there would be more "A" licence-holders in the country than the traffic warranted, which would depress the selling price of vehicles.

Lord de la Warr said he would examine the matter before the Report Stage.

The amendment was, by leave, withdrawn.

Transport Levy

Lord Lucas moved to omit Clause 10 (Transport Levy). He said he attacked the levy because there had never been a case for it, and as the Government had agreed to the company structure and disposal of assets, there was even less case for it. If units were properly marketed there should be no loss that could not be easily amortised by the Commission.

Lord Swinton said the nationalised undertaking had lost all its goodwill, and it might be that that loss should be charged to the Commission, but charging a loss to the nationalised industry did not mean charging it to a shareholding but to the taxpayer. The way to make good the loss was either for the Commission to bear it, or for the levy to be imposed. In its present form the levy was the best way out.

The amendment was negatived.

On Clause 12 (Payments to Commission out of Transport Fund for loss on disposal of road haulage undertaking), an Opposition amendment that sales should take place on values based on current replacement values was negatived.

Further consideration of the Bill in Committee was adjourned.

B.T.C. Bill

The Second Reading of the British Transport Commission Bill was again deferred in the House of Commons on March 9. As we closed for press, a debate was due to be held, some Conservative members having objected to Second Reading on the grounds stated in our February 13 issue.

Efficiency of British Railways

The Earl of Selkirk (Lord-in-Waiting on March 5 answered a question in the House of Lords by Lord Sempill on the alleged inefficiency of British Railways as shown in the Economic Commission for Europe *Bulletin of Transport Statistics for 1951* as to performance, ratio of staff to traffic, and so on. (The question of wagon turnround was referred to editorially in *The Railway Gazette* of February 13). The figures, he said, must be taken with caution, and it was not accurate to say that they were reliable indices of the British railway system.

The railway and general economic structure differed in Britain from that in other countries, Lord Selkirk pointed out. Britain was the most densely populated country in the world, with one exception, and had more lines per acre of land than any country except Belgium. The railways anywhere had to take careful consideration of what demand was made on them. They could not run services unless social and economic conditions made it desirable.

The railways of Britain, he went on, at present were "running on an even financial keel," whereas many Continental systems were incurring deficits. The B.T.C. maintained that restrictions on capital expenditure imposed by successive Governments had precluded even better results. Everybody including the railwaymen themselves thought there was room for improvement. He drew attention to the improvement since 1938 of 30 per cent in net tons per total engine-hour and to the drop in locomotive failures from one per 15,000 miles in 1949 to one per 32,000 at present. The Transport Bill suggested considerable reorganisation of the railways, and they hoped that in the decentralisation and freeing of the railways there was an opportunity of a marked improvement in regard to charges.

Central Transport Consultative Committee

Viscount Swinton (Secretary of State for Commonwealth Relations) in reply to a question in the House of Lords on March

4 said that the Minister of Transport could not take cognisance of a memorandum by the Central Transport Consultative Committee on transport reorganisation, alleged to embody views opposed to sale of nationalised road haulage assets. It had not been formally submitted as a report; it was not within the competence of the Committee to present a report of this general character; and the Minister had not asked for it.

Customs at Channel Ports

Mr. J. A. Boyd-Carpenter (Financial Secretary to the Treasury) said in reply to a question on February 19 that in the circumstances existing in Britain it would not be consistent with staff economy, passengers' convenience, or effective Customs control for Customs examinations to be held in the train between Channel ports and London.

Currency for Travel to France

Mr. R. Maudling (Economic Secretary to the Treasury) said in answer to a question on February 19, as to increasing the currency allowance for holiday travel to France, that there was difficulty in discriminating in favour of a particular country. There was also the question of the debt to the European Payments Union. In considering future arrangements, sympathetic consideration would be given to the position of France.

Accidents to Railwaymen

Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) said in answer to a question on February 23 that during the year 1951 the Minister of Transport received reports of 46 fatalities to railway servants while working on the permanent way, compared with the average of 59 for the five years 1946-50. The final figure for 1952 would be about 60. Most of these were caused by want of individual care and disregard of simple safety rules, and prevention largely was a matter of discipline. Inquiries were held by the railway employment inspectors into all fatalities and injuries reported, and their recommendations invariably received the close attention of the railway authorities. Educative measures included the wide circulation of the reports among the staff.

A suggestion that distinctive clothing be issued to men working on the line, so as to make them more readily visible to drivers, would be considered, Mr. Braithwaite added. As to the suggestion that look-out men be appointed by the authorities, and not by the ganger, it was felt that if a look-out man were on duty as a matter of routine he would be less alert.

Railway Accidents

Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) said in the course of an answer in the House of Commons on March 9 that the provisional figures for 1952 were 1,222 train accidents which caused 133 deaths and 1,093 injuries. The primary causes were being analysed.

Channel Tunnel

Mr. Alan Lennox-Boyd (Minister of Transport) said in answer to a question on March 9 that the forthcoming European transport conference under O.E.E.C. auspices was unlikely to discuss the Channel Tunnel; even if there was enough money to allow even of contemplating this project, he could think of more worthwhile British road plans to spend the money on.

Staff & Labour Matters

London Goods Depot Dispute

The unofficial work-to-rule at London goods depots in the London Midland Region to which reference was made in last week's issue, ended on March 5. After a meeting between representatives of the depot staffs and the N.U.R. it was decided to recommend resumption of normal working. It is understood that the men's claim for an increase in tonnage rates is to be discussed at a meeting between the Railways Staff Conference and representatives of the N.U.R.

Contracts & Tenders

British Railways, Eastern Region, have placed a contract with George Simpson (London) Limited, London, S.W.1, for repairs to and partial reconstruction of engine shed roof, Spital Motive Power Depot, Peterborough.

British Railways, Western Region, have placed the following contracts:—

W. H. Streeter Limited, Hampton, Middlesex. Painting sheds, grain stores and other buildings, in the goods depot at Hockley, Birmingham. Partial reconstruction of the Road Motor Engineer's Repair shop, South Lambeth.

Holborow & Sons Limited, Tetbury. Erection of a new blacksmiths' shop and carrying out alterations at the Signal & Telegraph Depot, Gloucester.

The Fairfield Shipbuilding & Engineering Co. Ltd., Chepstow. Dismantling of existing and erection of new superstructures for two bridges under the line near Great Malvern Station. Supply of steelwork and pre-cast concrete skewbacks and casing to cross girders and trimmer girders for reconstruction of bridge near Harrow-on-the-Hill Station.

E. C. Hughes Limited, Wokingham. Painting signals, signalboxes, etc., between Southall and Hanwell.

Bristol Stone & Concrete Co. Ltd. Supply of pre-cast reinforced and pre-cast pre-stressed concrete units for the roof of the long shed at Motive Power Depot, Cardiff (Canton).

Horseley Bridge & Thomas Piggott Limited, Tipton. Supply of steelwork, etc., for renewal of the roundhouse and long shed roofs and other works at Motive Power Depot, Cardiff (Canton).

Tudor Accumulator Co. Ltd., London, S.W.1. Replating and superintending the initial charge of two trip and switch closing batteries and supply of two rectifier charging equipments at Royal Oak and Shepherds Bush Substations.

L.M.R. Shunters' School

Encouraging results have attended the opening by British Railways, London Midland Region, early this year of a small school for the training of shunters of both passenger and freight trains. New entrants into the railway service from the Manchester district, Liverpool, Huddersfield, Preston, Blackburn, and other places in the North West are given a fortnight's comprehensive training by a qualified inspector under the direction of the Divisional Operating Superintendent, Manchester. This is followed by a week of practical training in the traffic sidings and marshalling yards where they will be employed.

The curriculum at the school includes all phases of work connected with shunting operations, such as identification of trains by headcodes and tail lamps, signalling of trains, different types of freight rolling stock and passenger stock, co-operation between signalmen, trainmen, and ground staff, and correct marshalling of passenger and freight trains.

The school is situated at Manchester Victoria Station and is equipped with models of vacuum hose and steam hose coupling and link coupling gear.

Union Pacific Gas Turbine Experience

Some of the results of operation with gas-turbine-electric locomotives, which have prompted the Union Pacific Railroad to increase its order on the General Electric Company from 10 to 25 4,500 units of this type, have now been released by that company. The tests on the original unit began on the Union Pacific in 1949, and were conducted in atmospheric temperatures up to 120 deg. F., and at altitudes up to a maximum of 8,014 ft. at Sherman, west of Cheyenne. In 21 months on the Union Pacific, the locomotive hauled 348,608,000 gross ton-miles of freight, using 1,448,787 gal. of fuel oil.

In low winter temperatures, it was found that the gas turbine could put 5,400 h.p. into the generators, or an overload of 900 h.p. above the normal rating, and that the electric drive would accept this power without overheating; in all temperature conditions the full output of the locomotive could be used. The unit was remitted to the shops several times for changes of design or repairs, but despite initial difficulties was able to show a 70 per cent availability record; from experience to date it is a reasonable assumption that 90 per cent availability will be obtained. The only complaint of the crews manning the locomotive was noise, but after changes had been made in the deflection of the exhaust, this trouble was rectified.

Fuel Capacity

In placing their first order for 10 gas-turbine-electric locomotives, the Union Pacific authorities asked for an increase in fuel capacity from 6,600 to 8,000 gal., but it was not found possible to increase the capacity beyond 7,200 gal. without exceeding the axle-load limits. This capacity is found adequate for runs of 300 to 400 miles without refuelling, and as the working of these locomotives is concentrated for the present on the 175-mile stretch of line between Green River, Wyoming, and Ogden, Utah, each unit can carry sufficient fuel for a return journey in all weather conditions.

The elevation of the line varies between 4,300 and 7,200 ft.; for 65 miles eastward from Ogden the ruling gradient is 1 in 88, and assistance is necessary with 5,000-ton trains, but the gas-turbine units can work loads of this size up the subsequent inclines, which are at a ruling inclination of 1 in 122, without any help. Fuel consumption averages 4·28 gal. per 1,000 gross ton-miles over this difficult route, and the units already in service are averaging 9,000 miles a month on these duties. Servicing at the end of each run normally takes about 45 min., but in emergency the time can be cut to 20 min.

On the westbound run, which is mainly downhill, experiments have been made by shutting down the power plant, and running the air compressors for the brakes off the auxiliary diesel engine, but this is a doubtful economy, as although it makes possible some economy in fuel, this is at the expense of additional brake shoe wear, as the dynamic braking is inoperable in such conditions.

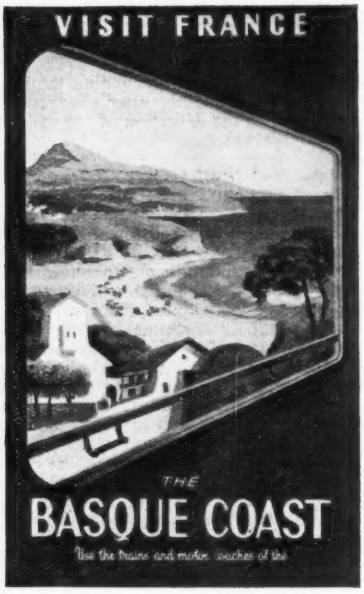
Notes and News

New Zealand Railways Technical Staff.—Applications are invited for the posts of draughtsmen or technical assistants in the Signals and Communications Section of the New Zealand Railways. See Official Notices on page 307.

Institute of Transport (Northern Ireland Section).—At the monthly meeting of the Northern Ireland Section of the Institute of Transport which was held in the Headquarters premises of the Ulster Transport Authority, Belfast, on February 19, Mr. J. Courtney, Chairman, presided. A paper on "The Forklift and Pallet method of Material Handling" was read by Mr. E. G. Whitaker, Transport Administration, Unilever Limited.

St. Patrick's Day Steamer Services.—The Western Region has announced that in connection with St. Patrick's Day the steamer sailing from Fishguard to Waterford on Monday, March 16, and from Waterford to Fishguard on Tuesday, March 17, will be cancelled. Sailings between Fishguard and Rosslare, and Fishguard and Cork will be as usual.

French National Railways Poster Publicity.—The poster illustrated below, of a typical stretch of the Basque coast, is one of a new series issued by the S.N.C.F. with a "through the carriage window" *motif;* others in the series depict the French Alps,



Basque coast scenery framed by a carriage window in a new S.N.C.F poster

the Auvergne, the Loire *château* country, the Riviera, and Paris. Another new poster includes an artist's impression of an express hauled by a Co-Co type electric locomotive.

Institute of Transport: Southern Section Annual Luncheon and Visit of President.—The annual luncheon of the Southern Section of the Institute of Transport took place on Saturday, February 21, at the Royal Pier Pavilion, Southampton. The President of the Institute, Mr. C. T. Brunner, and the Chairman of the Section, Mr. O. H. Lewis, responded to the toast of "The Institute of Transport and the Southern Section," proposed by Sir John E. Thornycroft, Governing Director of John I. Thornycroft & Co. Ltd. Sir Alfred E. Faulkner proposed the toast of "The Town and Port of Southampton," and responses were made by the Mayor of Southampton, Alderman E. Burrow, and Mr. R. P. Biddle, Docks & Marine Manager, British Railways, Southern Region.

North Eastern Region: Mutual Improvement Class Competition.—In the North Eastern Region semi-finals of the Mutual Improvement Class 1953 Competition held on March 4, Hull and West Hartlepool qualified for the final. West Harlepool with 63 points defeated Sunderland (55) and Heaton (Newcastle) (41½); and Hull gained 56 points against 51½ of York. The York team last year reached the final and was ultimately defeated by Eastleigh.

Imperial Chemical Industries Limited Exhibits at B.I.F.—At the British Industries Fair this year, Imperial Chemical Industries Limited will feature special exhibits showing the many applications of its wrought non-ferrous metals in building and transport. These will be in addition to general displays of sheet, strip, rod, extrusions, tubes, wire and fabricated metal sundries in copper, aluminium and their alloys and specimens of condenser and locomotive firebox plates.

New Station Signs for Kings Cross.—The Eastern Region is to implement shortly a scheme to improve the direction signs at Kings Cross Station. The painted board signs, some consisting of the old type of raised metal letters, are to be replaced by enamelled iron plates, wherever possible of the modern frameless type. Illuminated box signs will also be installed where signs need special lighting. All signs will be in Eastern Region colours of white letters on a dark blue background; these colours combine to give good visibility.

Collision with Wheels on Line.—The 4.45 p.m. express from Kings Cross to Newcastle last Sunday, when travelling at 55-65 m.p.h., ran into a pair of wheels standing on the track near Retford. Pieces of metal broke coach windows, and the front of the engine and the permanent way were slightly damaged. The train proceeded to Doncaster, where the engine was changed. The wheels are reported to have been left at the side of the track on Saturday. To place them on the rails would require two or three men. Police inquiries were proceeding as we went to press as to how the wheels came to be on the line.

Merrie England.—Last week the Great Western Railway (London) Operatic Society presented the comic opera "Merrie England" at the Scala Theatre, London, W.1. This society has a very high reputation for the excellence of its productions, but by common consent of the many railway officers from all sections of British Railways and other friends of the Western Region, the performance on this occasion was outstandingly successful. One of the most pleasing features of the show was the excellent diction of the singers, including Miss Shirley Hichens as Bessie Throckmorton, Miss Maimie Vince as Queen Elizabeth, and Mr. Bryan Gilbert and Mr. Herbert Mason as Sir Walter Raleigh and the Earl of Essex respectively. Mr. Walter Jenkins and Mr. William Coakham contributed a good deal to the comedy of the play as Walter Wilkins and Silas Simkins, and the four men of Windsor were portrayed by Mr. Cecil Ebdon, Mr. Arthur Pownall, Mr. Ronald Ratcliffe, and Mr. Stanley Everitt. The parts of the May Queen and "Jill-all-Alone" were excellently taken by Miss Jean Henderson and Miss Jane Munday. The finale of the play was a particularly impressive piece of production.

Inquest on "Princess Victoria" Sinking.—Open verdicts were recorded on March 4 on 67 of those who lost their lives when the British Railways vessel *Princess Victoria* sank on January 31. The Belfast City Coroner said he considered that Captain Ferguson and those under him had been correct in advising the passengers to remain in the ship as long as possible, but unfortunately help which had been expected was not at hand before the *Princess Victoria* sank.

Automatic Machines on Stations.—The British Automatic Co. Ltd., announces that it is hoped to resume selling chocolate and confectionery by its machines on London Transport Executive stations during the course of the next few months. The majority of its sweetmeat machines on British Railways stations are not up to modern requirements and are being withdrawn. It has not yet been decided whether the capital investment involved in providing new types of machines is justified.

Locomotive & Carriage Institution of Great Britain & Eire; Annual General Meeting.—At the Annual General Meeting of members of the Locomotive & Carriage Institution of Great Britain & Eire, held in the Board Room, Railway Clearing House, Eversholt Street, Euston, London, N.W.1, on Tuesday, February 24, Mr. S. T. Clayton, Assistant Motive Power Superintendent, London Midland Region, Euston, was elected President, and Mr. T. C. B. Miller, District Motive Power Superintendent, Eastern Region, Stratford, Vice-President.

Permanent Way Institution: Visit to Ipswich Motive Power Depot.—The East Anglia Section of the Permanent Way Institution has extended an invitation to the London Section to join in the visit to the Ipswich Motive Power Depot on Saturday, April 11. Members can travel either by the 10.30 a.m. train from Liverpool Street Station, and partake of lunch at Ipswich at 12.50 p.m., or by the 12.30 p.m. train from Liverpool Street Station to Ipswich. Both parties will be conveyed by trolleybus at 2.15 p.m. to the Motive Power Depot. The train for London will leave Ipswich Station at 5.52 p.m.

L.C.C. Fares Scheme Appeal Rejected.—In the Court of Appeal on March 5 the objections by the L.C.C. and eleven others against the hearing by the Transport Tribunal of the B.T.C. application for the Passenger Charges Scheme, 1953, were rejected. The Master of the Rolls, Lord Justice Jenkins, said that consideration had been given in the first place to the question whether, in the light of the Railways & Canals Commission (Abolition) Act, 1949, there was the right of appeal in this matter. After hearing argument however, he had come to the conclusion that the words used in section 8 (2) of that Act, when the Act was viewed in its context and with proper regard to its historical setting, did not have the effect of making paragraph 5 of the 10th schedule of the Transport Act of 1947

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

REQUIRED by the Central Railway of Peru two Locomotive Assistants preferably single and between 26/30. Qualifications: Full apprenticeship with British Railways or Locomotive Builders and experience in one or more of the following: Railway Machine Tool Operation. Welding Boiler works, Locomotive Running or Drawing Office. Also two fully trained Steam Locomotive Engineers aged between 30/45. Experience preferably in South America with locomotive running or locomotive workshops in supervisory positions. A.M.I.Mech.E., desirable and knowledge of Spanish essential. Apply SECRETARY, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s.* per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

NEW ZEALAND RAILWAYS TECHNICAL STAFF

APPLICATIONS are invited from suitably qualified applicants to fill vacancies for DRAUGHTSMEN or TECHNICAL ASSISTANTS in the Signals and Communications Section of the New Zealand Railways. Applicants should have some experience in general electrical work or railway signalling and communications. Further details and forms of application may be obtained on request from the OFFICE OF THE HIGH COMMISSIONER FOR NEW ZEALAND, 415, Strand, London, W.C.2, mentioning this paper and quoting reference No. 3/36/32. Completed applications should be lodged with the above-named not later than Friday, April 17, 1953.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10*s.* 6*d.*—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY MAINTENANCE PROBLEMS. By H. A. Hull (late District Engineer, L.M.S.R.). Valuable information. With much sound advice upon the upkeep of permanent way. Cloth. 8½ in. by 5½ in. 82 pp. Diagrams. 5*s.* By post 5*s.* 3*d.* *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

ACCOUNTANT (TRAFFIC AUDITOR) required by the Central Railway of Peru—about 30 years of age, preferably single, with general auditing and railway accounting experience, knowledge of Spanish desirable but not essential. Apply—THE SECRETARY, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

THE GAS-TURBINE LOCOMOTIVE. A technical description of the gas-turbine recently constructed by the Metropolitan-Vickers Electrical Co. Ltd. for the Western Region, British Railways. Subjects dealt with include body construction, bogies, traction motors, prime mover, generators and auxiliary equipment. A folding plate drawing of the locomotive is included together with illustrations and diagrams. Reprinted from *The Railway Gazette*, February 1, 1952. Price 5*s.* Post free 5*s.* 2*d.* *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2*s.* Post free 2*s.* 3*d.* *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

ineffective. With regard to the objectors' contention that the new scheme was merely an amendment to the existing one, he held that when the effect of alterations in charges was to produce an increase of £5 to £6 million in the revenue of the Commission, they could not be called trivialities although, by saying that there were no major alterations in the scheme, the Commission in its explanatory statement had tried to gild the pill for those who might have to swallow it.

Bookings for "Starlight Specials."—About 2,500 tickets were sold in the first week of bookings for the "Starlight Special" night trains, which will run on Friday nights from London to Glasgow and Edinburgh, beginning on April 10. Bookings so far made are reported to be divided fairly equally between St. Pancras and Marylebone.

Launch of British Railways m.v. "Maid of Argyll."—The new vessel for British Railways Clyde services, launched on March 4 from A. & J. Inglis Limited yard at Pointhouse, Glasgow, as recorded in last week's issue was named *Maid of Argyll* by Mrs. F. A. Pope, wife of Mr. F. A. Pope, Member of the British Transport Commission. The *Maid of Argyll* is similar in essentials to her sister ship, *Maid of Ashton*, launched three weeks ago. Both vessels can accommodate 650 passengers; principal dimensions are:—length 165 ft.; breadth 28 ft.; displacement 420 tons; they are each powered by two British Polar M. 461 diesel engines and have a cruising speed of 15 knots. Those present at the launch included:—

Mr. F. A. Pope; Sir Ian Bolton, Member of the B.T.C.; Sir Michael Barrington-Ward and Mr. G. T. Nicholson, Members of the Railway Executive; Mr. T. F. Cameron, Chief Regional Officer, Scottish Region, and Mr. T. H. Moffat, Deputy Chief Regional Officer; Provost J. H. Shaw, Rothesay; Sir John Craig, Chairman of A. & J. Inglis Limited; and Mr. James Ferrier, Managing Director, Rankin & Blackmore Limited, Greenock, who are installing the machinery.

British Industries Fair, 1953.—Replying to a recent Parliamentary question, Mr. H. R. Mackeson, President of the Board of Trade, said there was no foundation for rumours that this year's British Industries Fair was to be the last. Immediately the Coronation Fair was over, work would begin on the 1954 Fair, which would be held in London and Birmingham from May 3 to 14. The Exhibition Advisory Committee was studying the best way to organise the British Industries Fair in the longer term, but its members were unanimously of the opinion that the Fair should continue.

British Railways, Southern Region, Lecture & Debating Society: Continental Tour.—Provisional arrangements have now been made for the French tour of the British Railways, Southern Region, Lecture & Debating, which will take place from Saturday, June 6, to Sunday, June 14. Three nights will be spent in Bayonne, two in Pau, and one in Lourdes. Among a number of interesting visits will be an all day motor coach tour of the Basque country and a rail excursion from Pau over the heavily graded international line to Canfranc. A number of technical visits have also been arranged, but these will be purely optional.

Isle of Man Railway Company Results.—The accounts for the year ended December 31, 1952, of the Isle of Man Railway Company show receipts of £87,411 (against £84,866 for 1951) and expenditure of £79,676 (£78,136), which with a balance from the previous year of £2,762 and interest on investments and so on amounting to £5,150, gives £15,647 (£16,037). After deduction of £7,197 interest on debenture stock, rent charges and so on, the balance available for dividends is £7,197 (£7,275). The Directors recommend dividends of 5 per cent on the preference and of 2½ per cent on the ordinary share capital, leaving £2,451 to be carried forward.

Railway Students' Association, Summer Convention.—The Railway Students' Association has now prepared the programme for its 1953 Brussels Convention, to be held from May 16 to May 20. The party will travel from Victoria at 10 a.m. or 2.30 p.m. *via* Dover and Ostend on Saturday, May 16. On Monday, May 18, a paper will be read by an officer of the Belgian National Railways on "The Part Played by Belgian Railways in International Traffic," and the President of the Association, Mr. C. P. Hopkins, Chief Regional Officer, British Railways, Southern Region, will preside at this meeting. During the Convention visits will be made to the new Nord-Midi Junction Railway and train working, the locomotive and passenger stock depots of Schaerbeck, or mechanised freight depots at Tour et Taxis, a journey to Antwerp by electric train for visit to the Port, and a visit in two groups to the Belgian Railways Museum at the Nord Station in Brussels. The party will leave Brussels Midi on Wednesday, May 20, at 12.12 p.m., due to arrive at Victoria, London, at 7.50 p.m.

Railway Benevolent Institution.—At a meeting on January 21 the board of the Railway Benevolent Institution granted annuities to 16 widows and 14 members involving an additional liability of £586 18*s.* per annum. Sixty-four gratuities were also granted amounting to £684 7*s.* to meet cases of immediate necessity. Grants made from the Casualty Fund during the month of December amounted to £948 5*s.* 6*d.*

Renaming of Scottish Region Stations.—The following Scottish Region stations have been renamed; the new name is shown in italics in parenthesis: Ardrossan (*Ardrossan Town*); Beith (*Beith Town*); Clydebank (L.M.S.) (*Clydebank Riverside*); Fairlie Town (*Fairlie High*); Keith Stn. & Junction (*Keith Junction*); Partick (L.N.E.) (*Partick Hill*); Stranraer (*Stranraer Town*); Tyndrum (L.M.S.) (*Tyndrum Lower*); Uddingston (L.N.E.) (*Uddingston East*); Whiteinch (L.M.S.) (*Whiteinch Riverside*); and Yoker (L.N.E.) (*Yoker High*).

Road Accidents in December and January.—Reports so far received by the Ministry of Transport show that road casualties in January totalled 15,055. The killed numbered 392, an increase of 15 over January, 1952; the seriously injured 3,750, an increase of 403; and the slightly injured 10,913, an increase of 442. The Ministry states that bad weather may have contributed to this leap in casualty figures. In some areas, including the Metropolitan Police District, there were fewer casualties than in January, 1952. Final figures for December, 1952, show a total of 18,458, or 271 more than in December, 1951. The main increase was among the slightly injured and accounted for by the greater number of accidents to drivers and passengers of vehicles other than motor cycles. This confirms the impression that it was caused by the persistent fog.

Institute of Traffic Administration.—Arrangements have been completed for the Annual Conference of the Institute of Traffic Administration, which will be held

at the Royal Beach Hotel, Southsea, from Friday, May 1, to Sunday, May 3. On May 1 the annual general meeting, for members only, at 7.30 p.m., will be followed by an informal reception and film show. On Saturday, at 9.45 a.m., a symposium on Modern Trends in Traffic Handling. A paper on the "Freight Aspect" will be read by Mr. T. S. D. Morris, and one on the "Passenger Aspect," by Mr. F. R. Moore. In the afternoon there will be a steamer trip at 2 p.m. to Ryde, Isle of Wight. In the evening, at 7 p.m. for 7.30, the annual dinner and reception will take place. On Sunday at 9.45 a.m. there will be a meeting of the National Council, or coach trip for those not engaged in Council.

Mundesley to Cromer Branch to be Closed.—The Eastern Region announces withdrawal of all train services as from April 7 from the Mundesley to Cromer Beach branch of the former M. & G.N.J.R., and closing of Trimmingham and Overstrand Stations and Sidestrand and Cromer Links Halts. Eastern Counties Omnibus Company's services serving this area will be modified. Station facilities will continue to be available at Mundesley and Cromer, and Railway Executive cartage services for parcels and freight traffic.

Recovering Waste Heat from Diesel-Driven Generators.—In a film entitled "The Diesel Generator as a Composite Heat and Power Unit," Shell-Mex & B.P. Limited outline the theory and basic methods of waste heat recovery and point out what can be gained by higher thermal efficiency. Five modern plants where heat recovery is practised are shown. The efficiency of a diesel-driven electric generator may be 37 per cent, but if, in addition, heat is recovered from the cooling water and engine exhaust, the total efficiency may be raised to 81 per cent.

Jonas Woodhead & Sons Limited.—Despite acute shortage of steel the firm of Jonas Woodhead & Sons Limited again showed improvement in net profit for the year. Captain Alan Kyle, the Chairman, said at the annual general meeting on February 16 that output levels had been higher, and consolidated profit before taxation reached the record figure of £179,294. Net profit after taxation, however, was £50,695, as against the previous year's figure of £80,296. Demand for the company's suspension systems from abroad continued heavy, and was particularly heartening in the case of the Woodhead-Monroe shock absorber for locomotives and coaches. Close attention was being given to the possibility of creating new factories to serve countries which had nationalised their railways or imposed high tariffs and credit restrictions. He hoped to be able to report some concrete developments in this direction at this time next year.

Forthcoming Meetings

March 16 (*Mon.*).—Institute of Transport, in the Jarvis Hall, R.I.B.A., 66, Portland Place, London, W.1, at 5.45 p.m. Paper on "Developments and Prospects in British Transport, with Special Reference to Railways," by Mr. A. J. Pearson.

March 18 (*Wed.*).—Institute of Traffic Administration, Manchester Centre, at the Carlton Hotel, Brown Street, at 7 p.m. Annual General Meeting.

March 18 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1, at 5.30 p.m. Annual General Meeting and paper on "Locomotive Maintenance," by Mr. R. C. Bond.

March 19 (*Thu.*).—Permanent Way Institution, London Section, at the Railway Executive Headquarters, 222, Marylebone Road, N.W.1, at 6.30 p.m. Paper, illustrated with lantern slides, on "The South Wales Docks," by Lt.-Colonel R. H. Edwards.

March 20 (*Fri.*).—Institute of Transport, at the Connaught Rooms, Great Queen Street, W.C.2, at 7 for 7.30 p.m. Annual Dinner.

March 20 (*Fri.*).—Institute of Traffic Administration, London Centre, at the Kingsley Hotel, Bloomsbury Way, W.C.1, at 6.45 for 7 p.m. Annual Dinner.

March 24 (*Tue.*).—Institution of Locomotive Engineers, visit to works of Pressed Steel Co. Ltd., Cowley, Oxford.

March 25 (*Wed.*).—Institute of Traffic Administration, Preston Centre, at the Bull & Royal Hotel, at 7.30 p.m. Annual General Meeting.

March 26 (*Thu.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "The Trend of Development in the Design and Equipment of Underground Railways," by Messrs. D. H. Coombe and G. J. Willson.

March 27 (*Fri.*).—Institution of Mechanical Engineers, at Storey's Gate, St. James's Park, London, S.W.1, at 5.30 p.m. Annual General Meeting, corporate and non-corporate members only.

Railway Stock Market

Buoyant and more active conditions have ruled in stock markets, where there was a general tendency to take a hopeful view of the latest developments in world affairs. Nevertheless the main factor helping markets was the assumption that the Budget will bring some reduction in taxation. British Funds were strong under the lead of 3½ per cent War Loan, reported to be in demand by foreign buyers impressed by the increase in the sterling area gold and dollar reserves. It is widely assumed that Mr. Butler's talks in Washington may have done much for wider convertibility of sterling; the disposition is, however, to assume that this will not be proposed until later in the year and may then be part of a scheme for increasing the convertibility of other European currencies as well, as a means of stimulating world trade.

The strength of other sections of markets has overshadowed foreign rails, though good features were not lacking. Canadian Pacifics rose to $56¾ on reports of an increase in freight rates; elsewhere, White Pass remained an active feature, though best levels were not fully held, the no par value shares being $30 at the time of writing and the convertible debentures £106.

Manila Railway issues remained active, but this was another instance where best levels were not held. The market fears that no early settlement in regard to the company's big holding of Manila Railroad bonds is likely, though proposals for a settlement over a period by the Railroad company may be announced before long. Manila Railway "A" debentures were 86, the "B" debentures 75, the preference shares 9s. 9d. and the 1s. ordinary shares 4s. 10½d. profit-taking having followed earlier gains.

Nyasaland Railways 3½ per cent debentures changed hands at 71½. Chilian Northern first debentures were dealt in at 25½ and International of Central America no par value shares have marked $14⅛.

The speculative buying of Baltic and other Iron Curtain bonds which followed the latest news from Russia extended to Russian bonds as well, and there were further dealings recorded in the old Russian railway bonds, particularly Russian South Eastern which showed business up to 12s. 6d.

Antofagasta ordinary eased to 9½ and the preference stock to 50½, while dealings between 45½ and 48 were shown in the 4 per cent debentures. Brazil Railway bonds marked 7. There was more activity in Mexican Central "A" debentures around 68. San Paulo ordinary units were 6s. 3d. and Nitrate Rails shares better at 21s. with Taltal shares 14s. 9d.

United of Havana stocks became a little firmer after their recent decline, but later reflected further selling by tired holders. The "A" stock receded to 52, the "B" to 48½, and the second income stock to 17, while the consolidated stock was 2¼.

Among road transport shares, buyers were about because of market estimates that at current prices the shares are much undervalued in relation to the value of assets. The tendency now is for the value of assets to influence market prices of most shares rather more fully than formerly, though the rate of earnings and the dividend paid is of course the main factor. Lancashire Transport moved up to 44s. and Southdown to 32s. West Riding were 34s. B.E.T. deferred stock has been firm at £495 in response to talk of higher dividend prospects.

In the engineering and kindred sections there has been a firm tendency, partly because of the prevailing trend on the Stock Exchange, and partly because of the latest steel production figures which have increased hopes that rationing of steel may end later this year. Cammell Laird 5s. shares have changed hands at slightly over 14s. in response to hopes of an increase in the forthcoming dividend. Vickers were firm at 48s., John Brown favoured around 45s. and Guest Keen inclined to attract around 54s. 3d. The market is, however, still uncertain whether companies which after the end of nationalisation will have an opportunity to reacquire their former steel assets will decide to conserve resources and not increase dividends at this stage. Ruston & Hornsby were 40s. 9d., T. W. Ward 76s. 6d. x.d., Tube Investments 62s. 6d. while Babcock & Wilcox displayed activity around 71s. 3d.

Among locomotive builders and engineers, higher dividend hopes have kept Beyer Peacock firm at 35s. 10½d. Central Wagon were active around 65s., Hurst Nelson 42s. 6d., Birmingham Carriage 35s. and North British Locomotive strengthened to 16s. Vulcan Foundry were 24s. 6d., Wagon Repairs 5s. shares 12s. 3d., and Charles Roberts 5s. shares 19s. 9d.